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STRUCTURE OF OUR CHERRY BARKS.

By Edson S. Bastin.

Presented to the American Pharmaceutical Association, Denver Meeting, 1895.

The knowledge that the barks of two or more of our native species of cherry were occasionally, at least, substituted for the official species has led to the studies set forth in this paper.

The species of cherry growing wild within the limits of the United States are the following: *Prunus Pennsylvanica*, Linné filius; *Prunus Virginiana*, Linné; *Prunus serotina*, Ehrhart; *Prunus demissa*, Walpers; *Prunus Avium*, Linné; *Prunus Cerasus*, Linné; *Prunus Mahaleb*, Linné; *Prunus Caroliniana*, Aiton; *Prunus sphærocarpa*, Swartz; *Prunus emarginata*, Walpers, var. *mollis*, Brewer; and *Prunus ilicifolia*, Walpers.

This list excludes the closely related plums and those species of cherry which do not attain dimensions greater than those of a small shrub.

Of the species listed the barks of the following have been studied and are here described and figured: *P. serotina*, *P. Avium*, *P. Mahaleb*, *P. Virginiana* and *P. Pennsylvanica*. Efforts were made to procure the barks of *P. Caroliniana*, and of the Pacific Coast species, *P. demissa*, *P. emarginata*, and *P. ilicifolia*, but so far without success.

Prunus serotina, commonly called the Black cherry, is a tree of large size, common in the forest regions of the United States, from Minnesota, eastern Nebraska, and Louisiana, eastward to the Atlantic. It also occurs in southern Canada and Nova Scotia. It does not occur in the Rocky Mountains or west of them, except as

cultivated in San Francisco and vicinity, and perhaps in the vicinity of some other cities of the Pacific Coast. It seems to attain its fullest development in the valley of the Ohio, where it sometimes attains the height of 100 feet and its trunk a diameter of 4 feet. Ordinarily, however, it is smaller, with a trunk 18 inches in diameter and a height of 50 or 60 feet. Its close-grained heartwood

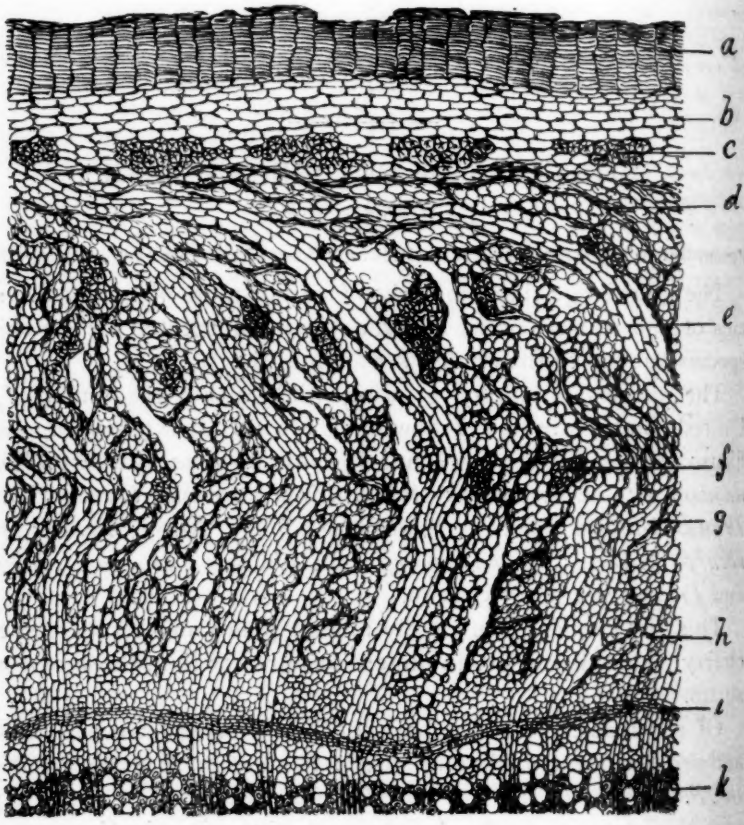

FIG. 1.—Transverse section of the stem bark of Prunus serotina.

which is capable of taking a high polish, and which has a light red color, deepening with age, is highly valued for cabinet and ornamental work. The bark of the trunk is blackish-brown and rough exteriorly, the exterior corky layers exfoliating transversely in thickish but rather narrow pieces. The bark of the twigs, however, is smooth or even glossy, dark reddish-brown, thickly punctate with

small whitish lenticels, and the corky layer may be readily peeled off transversely in a thin, papery layer, exposing the deep green middle bark beneath. The corky layer of the root, which is somewhat lighter colored, begins to fissure and exfoliate much earlier, and when the cork is removed it exposes a middle layer which is at first white, but, on exposure, soon turns ochreous

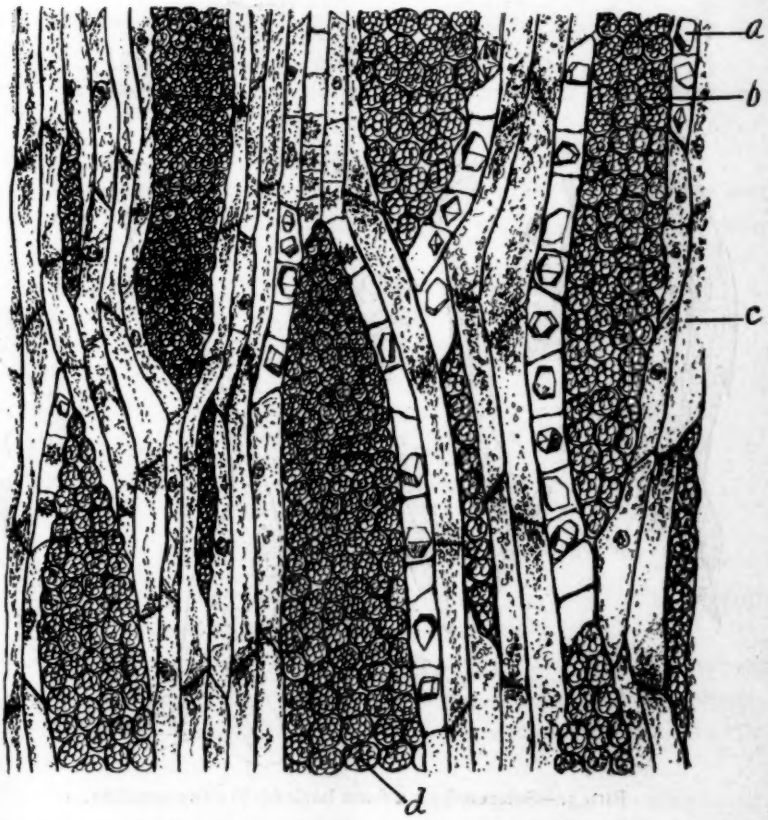

FIG. 2.—Longitudinal tangential section of inner bark of Prunus serotina.

brown. The leaves are short-petiolate, with thin, lanceolate, toothed, deciduous stipules, and elliptical, oblong, or oblong-lanceolate, taper-pointed, appressed-serrulate leaves, which are usually obtuse, but sometimes acute at the base, and commonly have a pair of glands on the petiole near the insertion of the blade. They are smooth on both surfaces, thickish, and deep and some-

what glossy green on the upper, and much lighter green on the lower surface.

The flowers occur in late spring, after the leaves, in simple racemes at the ends of small leafy branches. They are small, white and with a decided but not very agreeable odor. The drupes are small, round, about the size of peas, blackish-purple, destitute of a

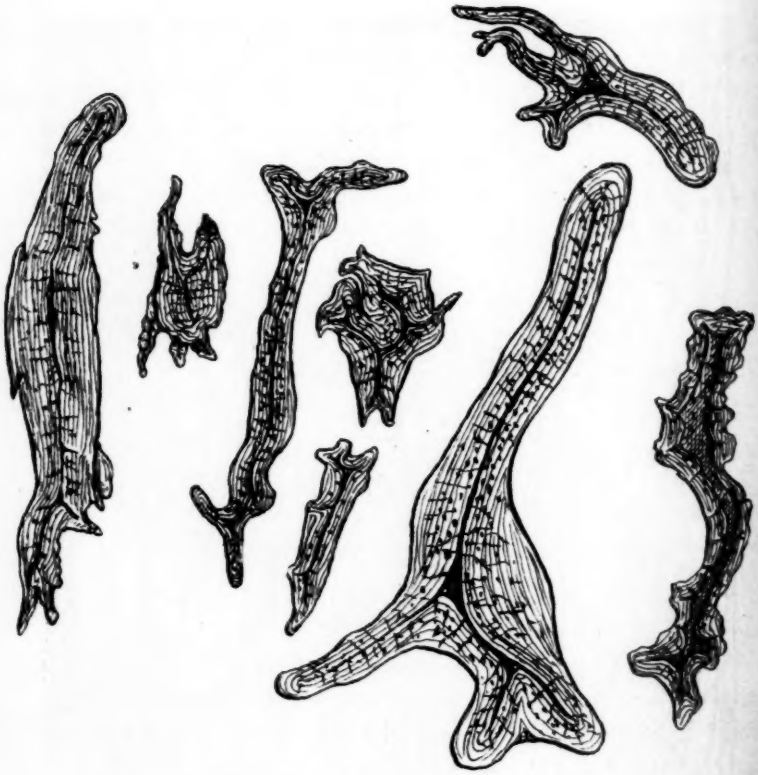

FIG. 3.—Sclerenchyma from bark of Prunus serotina.

bloom, bitterish, but not decidedly astringent to the taste, and containing a roundish-ovate, marginless pit.

Structurally the barks of the different species of cherries examined resemble one another in the following particulars:

(1) The phellogen begins its formation in the first layer of collenchyma cells beneath the epidermis, and no considerable development of the phelloderm layer beneath takes place.

(2) They all resemble one another in the facility with which the periderm layers are separated transversely into thin sheets.

(3) The medullary rays in all the species are several rows of cells thick, though the number of cells differs somewhat in different species.

(4) In all the barks examined the medullary rays are more or less wavy in their course, though less so in some species than in others.

(5) All the barks show a strong tendency to fissure between the medullary rays and adjacent bast tissues.

(6) All of the barks, especially of the trunk and older branches, are rich in oxalate of calcium crystals, some of them containing it in such quantities as to make sectioning difficult.

(7) All of the barks possess a bitter, astringent and more or less aromatic taste, but the bitterness is much less marked in some than

FIG. 4.—Starch from stem bark of Prunus serotina.

in others, and the aromatic quality is very decided in some, but barely perceptible in others.

The most prominent structural differences are in the number, arrangement and character of the sclerenchymatous elements. These and other differences will be noticed in the descriptions of the barks of the different species.

Bark of the Stem of Prunus serotina.—The periderm or corky layer separates readily in transverse bands from the rather thin layer or cortex beneath. The latter contains numerous clusters of short sclerenchymatous cells or stone cells, which form an interrupted zone in this layer of bark. Just underneath this layer the medullary rays, whose course from the cambium zone outward is more or less wavy, terminate very obliquely. The rays in their thickest part are from four to six cells broad, and between them lie the bast masses which, except near the cambium zone, consist of crumpled sieve

elements, sprinkled with masses of sclerenchyma. These masses are made up chiefly of stone cells, but sometimes contain more elongated elements, which, perhaps, might be regarded as bast fibres. They are, however, much shorter than bast fibres usually are, and

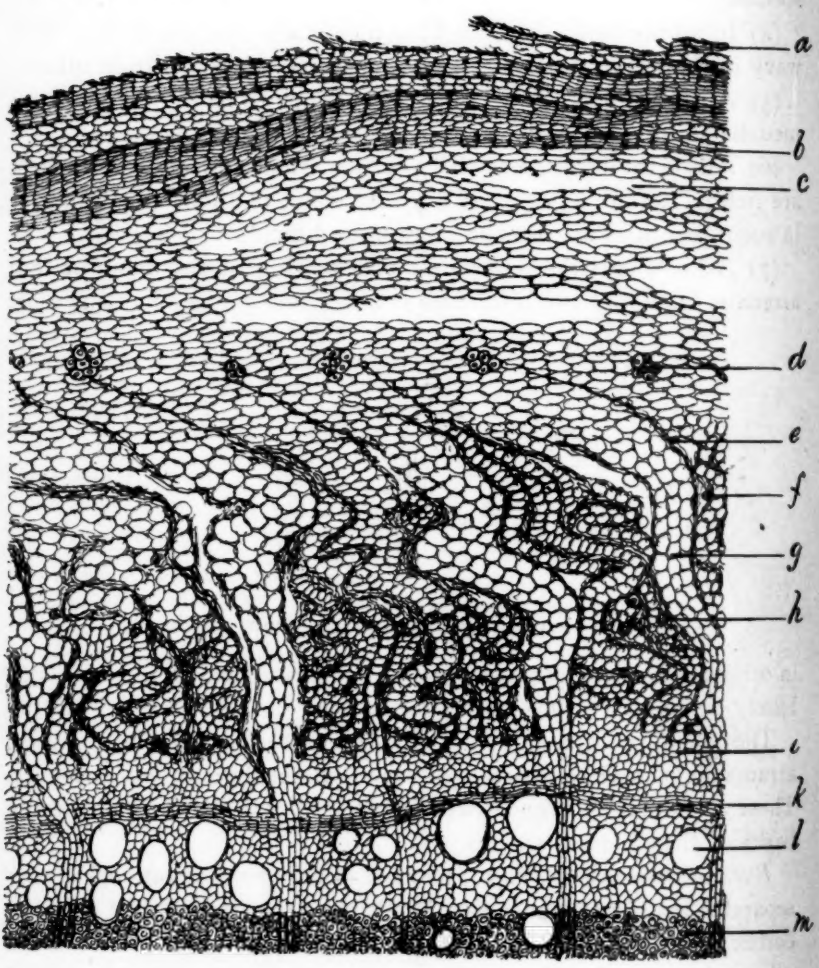

FIG. 5.—Cross section of stem bark of Prunus Mahaleb.

every gradation between them and stone cells may be observed. The fissuring along the bast masses is conspicuous in the cross-section. In the older bark, crystals of calcium oxalate are so abundant as to seriously interfere with sectioning. These crystals are

sometimes stellately clustered, but more commonly are single and are most abundant in the cells adjacent to the medullary rays.

The medullary rays contain usually an abundance of very fine-grained starch. The granules of starch are usually spheroidal and simple, with an inconspicuous central or sub-central hilum, and no

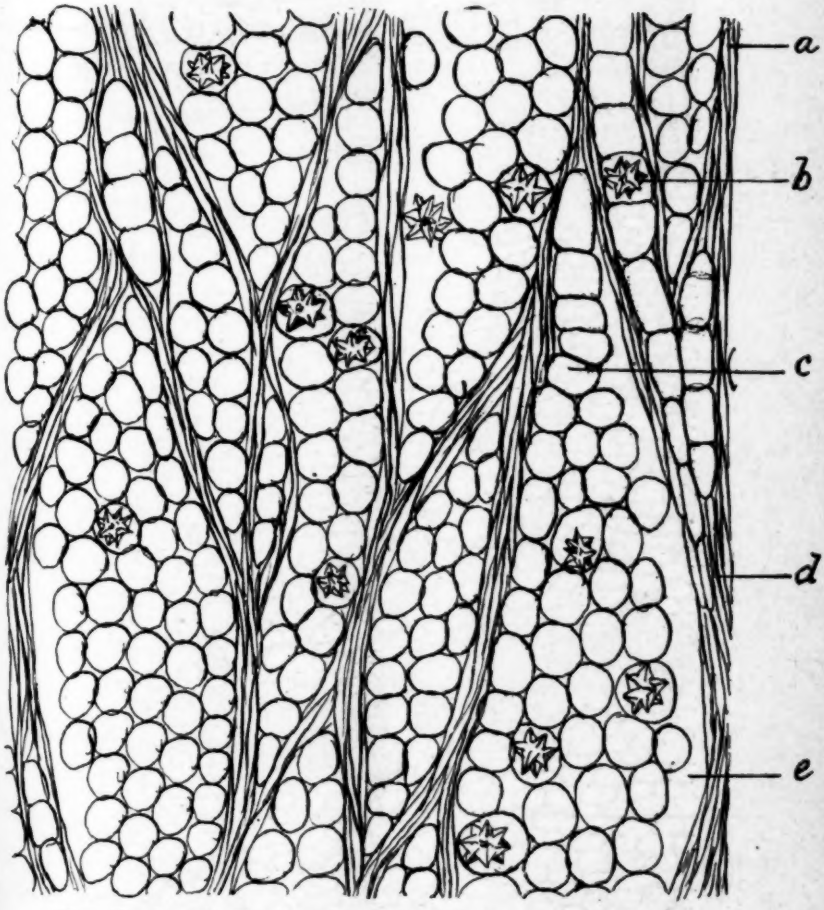

FIG. 6.—Longitudinal section of inner bark of Prunus Mahaleb.

other recognizable markings. Some double and treble grains, however, are observable.

The root bark of this species bears a close resemblance to that of the stem, but it is lighter exteriorly and the corky layer earlier begins to fissure. The clusters of sclerenchyma cells are less

numerous, and the bast fibres somewhat better differentiated. They are still few in number, however, as compared with the stone cells,

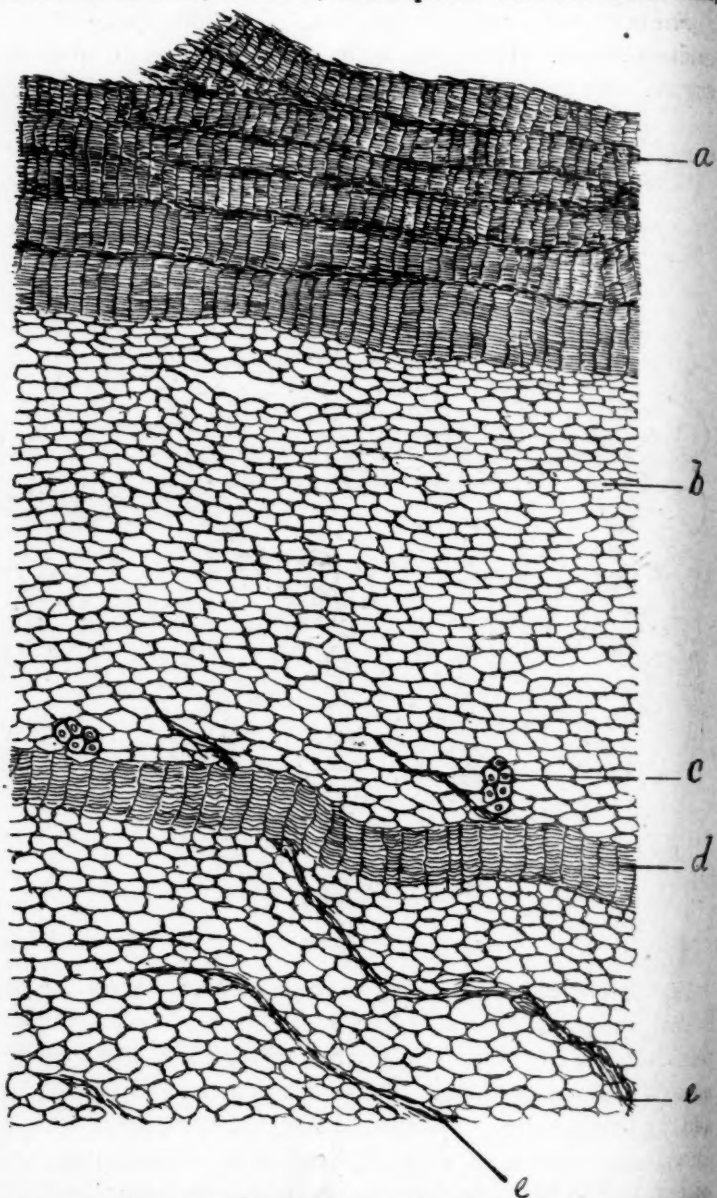

FIG. 7.—Cross section of bark of Prunus Mahaleb, including outer, middle and outer portion of inner bark.

and they occur chiefly in association with the latter, though sometimes they are isolated or in separate clusters of few fibres.

Both root and stem bark are decidedly bitter and aromatic, and somewhat astringent to the taste. The aromatic or bitter almond odor and taste in fresh specimens are more pronounced in the root bark. This would lead to the inference that the latter is the more valuable of the two for medicinal purposes.

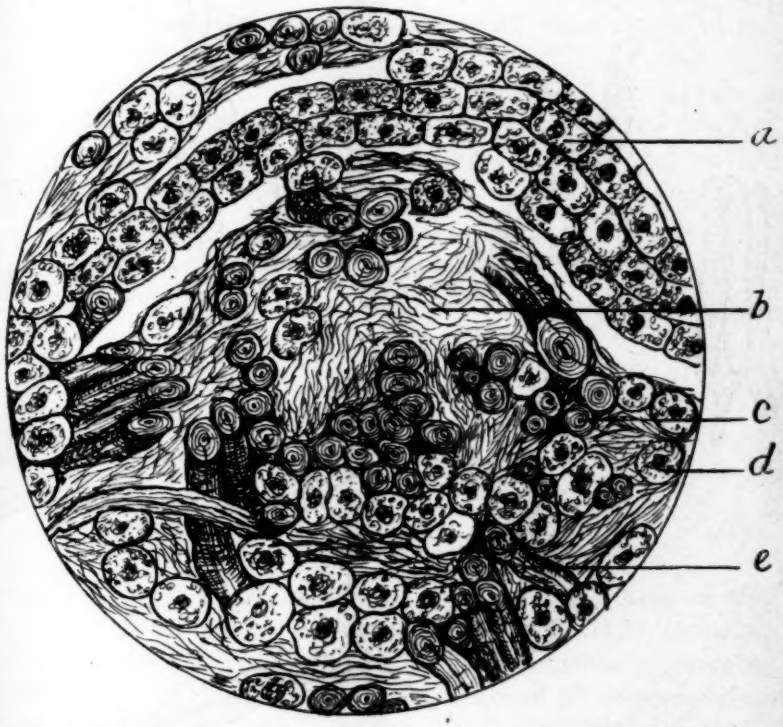

FIG. 8.—Small portion of cross section of inner bark of Prunus Avium.

The Stem Bark of Prunus Mahaleb.—The bark on the old stem is dark gray and fissured, though less strongly so than that on the trunk of *Prunus serotina*. There appears to be a greater development of secondary cortex in this species than in *Prunus serotina*, and a corresponding difference in the cork formation. Some of the later-formed bands of secondary cork not merely invade the inner cortex, but in the older bark cut even into the outer portion of the bast layer.

The sclerenchymatous elements are less abundant than in *Prunus serotina*, and consist mostly of small clusters of bast fibres, stone-cells being wholly or nearly absent. The medullary rays are quite similar to those of *P. serotina*, and the intervening sieve elements are, in the older bast areas, likewise much crushed and fissured.

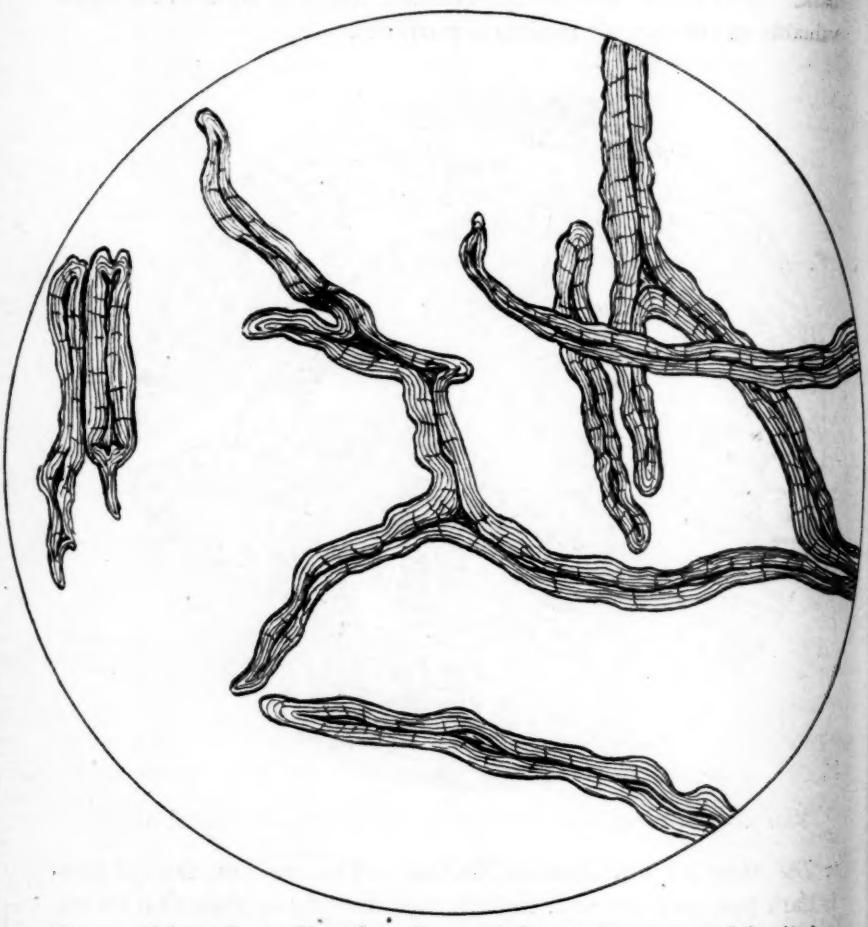

FIG. 9.—Sclerenchyma fibres from Prunus Avium as they appeared *in situ* in a longitudinal section.

Crystals of calcium oxalate are abundant, but much less so than in *P. serotina*, and are seldom single in the cells, but in stellate clusters. Probably owing to the season of the year when the bark was gathered, namely, in June, no starch grains were recognized.

The bark has the bitterness and astringency of the official species, but much less of the aromatic quality.

Often the portions of the wood adhering to a medicinal bark afford characters which aid in identification. Between the wood of *Prunus Mahaleb* and that of the official species there are marked structural differences. The ducts of the former are much larger and also less evenly distributed, being most abundant and largest adjacent to and on the exterior side of the ring of growth, so that the rings of growth are rendered much more conspicuous to the eye.

The Stem Bark of Prunus Avium.—The bark of this species is smoother and lighter colored, being reddish-brown on the twigs of the second or third year, and deep gray or reddish-gray on the trunk. The lenticels on the twigs are much fewer than in the official

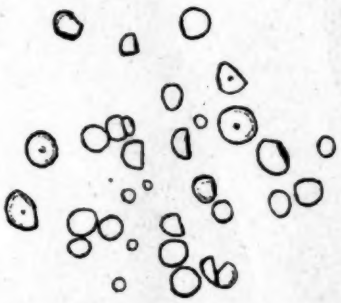

FIG. 10.—Starch from stem bark of Prunus Avium.

species, but they are still present and enormously increased in size in trunks 6 inches or more in diameter. They appear as lenticular, transversely elongated, corky patches, often 2 inches or more in length. The outer bark may be easily stripped off transversely in broad bands, exposing the deep green middle bark, and the corky layer, in turn, may be easily split into thin lamellæ, corresponding to the concentric stratification lines seen in the cross-section.

The inner bark shows the wavy medullary rays, terminating very obliquely at the exterior, the wavy bands of compressed sieve tissue in the older portions, and the fissuring between the medullary rays and the bast masses, which are shown in most species of cherry; but it differs from the official species and from some others in the decidedly fibrous character of the bast layer. There are not only scattered and very tortuous lignified fibres in its outer portions, or

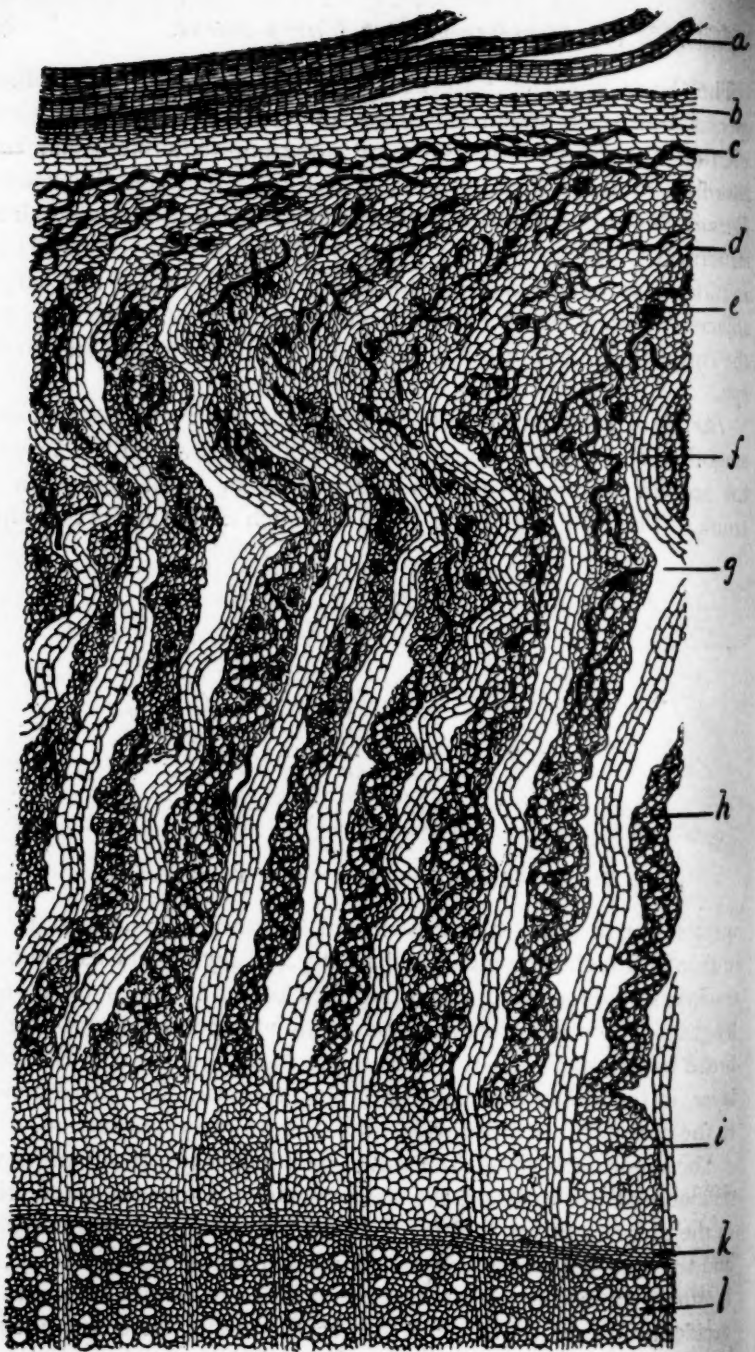

FIG. 11.—Cross section of stem bark of Prunus Pennsylvanica.

even extending into the middle bark, but clusters and isolated fibres occur abundantly throughout the bast. Many of the fibres, especially those occurring in bundles, are long and slender, and run quite regularly lengthwise of the bark; but others, especially the isolated ones, are very irregular in form, tortuous in their course, and often branching.

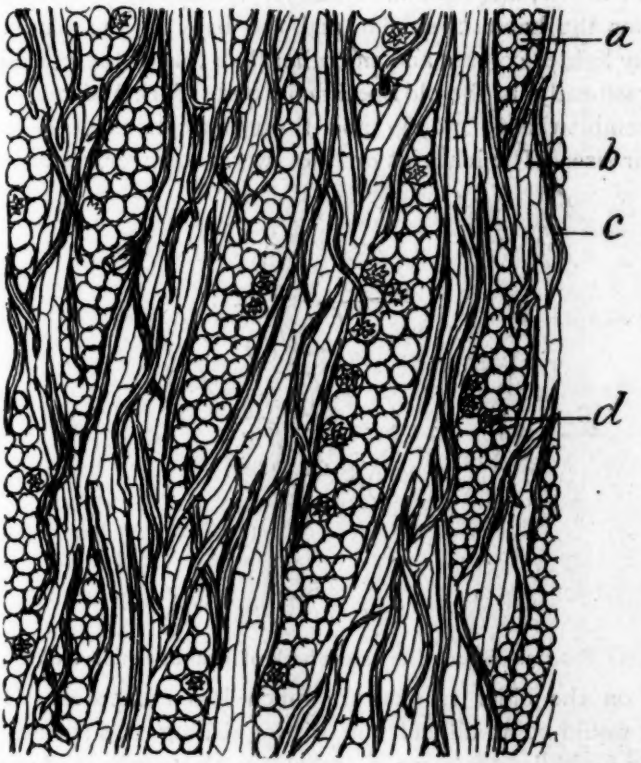

FIG. 12.—From longitudinal tangential section of inner bark of Prunus Pennsylvanica.

The masses of bast fibres are never very large, and are not arranged with any apparent order.

Crystals of calcium oxalate in the specimens examined were much less abundant than in *P. serotina*, and they were nearly always in stellate masses.

The specimens studied were gathered in June and July, and in these, starch, though present in the medullary ray-cells, was not

abundant. It was also very fine grained; the grains were often rounded and simple, but also frequently double or triple. The faintly distinguishable hilum is nearly central. The taste of this bark is decidedly bitter and astringent, but the aromatic or bitter almond odor and taste are usually scarcely perceptible.

The Stem Bark of Prunus Pennsylvanica.—This tree, when not in fruit or flower, might be mistaken for a small specimen of *P. serotina*, for the habit is similar, and the bark of the trunk, though usually lighter colored and smoother than that of the official species, is occasionally, in the old specimens, quite dark and rough enough to resemble that of young and thrifty specimens of *P. serotina* of similar size. The lenticels on the twigs, however, perceptible also

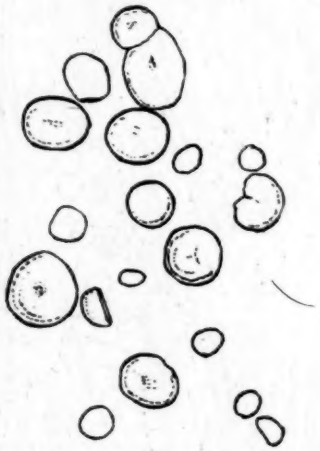

FIG. 13.—Starch from stem bark of Prunus Pennsylvanica.

even on the older trunks, are much less numerous. Of course, there would be no difficulty in distinguishing this species when in flower, for its flowers occur in umbel-like clusters instead of racemes; in early instead of late spring; and from separate, lateral scaly buds instead of on the ends of lateral leafy branches. The fruits also are red, on long pedicels, and with a thinner, more acid and not a bitter taste.

The lenticels on the trunk are not so large as those of *P. Avium*, seldom attaining a length transversely of more than half an inch. The corky layer, however, separates from the sub-lying green tissue in a very similar manner, and in cross-section this layer shows a similar, though finer, stratification. When the brown or blackish

scurf is rubbed from the surface of the periderm, a fine red-brown or mahogany color is exposed.

In this species, as in *P. Avium*, there appears to be but a slight development of the secondary cortex. Similarly, the medullary rays of the inner bark are oblique and wavy. They are, however, narrower, being seldom more than three cells broad. The fissuring

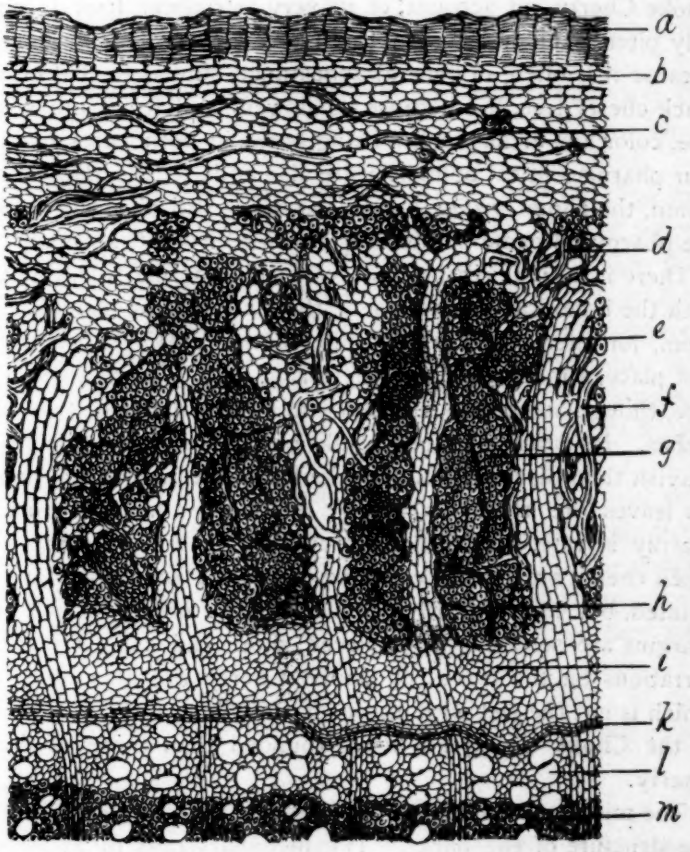

FIG. 14.—Cross section of stem bark of Prunus Virginiana.

and the collapsed sieve tissue are also similar. The older portions of the inner bark abound in tortuous and strongly lignified sclerenchyma fibres, similar to those of *P. Avium*, but the clusters of more typical bast fibres are considerably less numerous.

The taste of this bark resembles that of *P. Avium*, being decidedly bitter, somewhat astringent, but scarcely at all aromatic.

Crystals of calcium oxalate abound, and they are mostly in stellate masses.

The starch grains are similar in shape to those of *P. Avium*, but they average of larger size, and compound forms appear to be somewhat less numerous.

Stem Bark of Prunus Virginiana.—This tree, commonly called Choke Cherry, on account of its very astringent fruit, is undoubtedly often confounded with the Black Cherry. This is not only because it is often, in general appearance, similar to that of a small black cherry tree, but because its flowers and fruits are similar in size, color and arrangement, being borne in both cases in racemes. Our pharmaceutical nomenclature also adds to the danger of confusion, the name *Prunus Virginiana* being still absurdly retained as the pharmacal name of the drug obtained from *P. serotina.*

There is no real reason, however, why any one tolerably familiar with the botanical characters of the two species should confound them, for there are marked differences. *P. Virginiana* is, in the first place, a much smaller tree, in fact, usually more a shrub than a tree, though sometimes its stem attains a diameter of two or three inches. Its branches and trunk are not so dark, being rather grayish than blackish, and the lenticels are much less numerous. Its leaves are thin, oval-oblong or ovate, abruptly pointed, and sharply serrate, with slender, projecting teeth, while those of the black cherry are thickish, oblong-lanceolate or oblong and taper-pointed, but less abruptly so than in the other species, and the margins are serrate with incurved, short and callous teeth. The serrations on the leaves of Choke Cherry are also often double, which is not the fact with those of the Black Cherry. The petals of the Choke Cherry are more rounded than those of the Black Cherry.

The microscope, however, reveals the most decided differences in the structure of the barks. The medullary rays in *P. Virginiana*, which are three or four cells wide, are less flexuous than in *P. serotina*, or in any other species examined. Proper stone cells, so abundant in the bark of the Black Cherry, are almost wholly absent from the bark of the Choke Cherry, but the tortuous sclerenchyma fibres, similar to those in *P. Avium* and *P. Pennsylvanica*, not only abound in the inner bark, but in the cortex. Bast fibres of the ordinary form also occur in large and irregular masses in all the

mature portions of the inner bark. By reason, perhaps, of the abundance of bast fibres, the radial fissuring, so observable in all the other species studied, is much less conspicuous in this.

Owing, probably, to the fact that the specimens studied were gathered in the season of active growth, namely, about June 1st, no starch was found in the sections examined.

Oxalate of calcium crystals in stellate masses are abundant in the species.

In aromatic quality and in bitterness, this species is inferior to the Black Cherry, though the bitter almond odor and taste are much more evident than in any of the other species thus far studied.

Another cherry bark, samples of which were sent by Professor Henry G. Greenish, of London, has been examined by the writer, and found to resemble, in most of its structural characteristics, that of our *P. Pennsylvanica*. It differs from the bark of this species, markedly, however, in some particulars, and was probably derived from one of the unstudied Pacific Coast species. The sample was very bitter, somewhat astringent, and slightly aromatic. Professor Greenish states that the sample was taken from a quantity which had been sent to the London market as Wild Cherry Bark.

This outline of the studies thus far made by the writer in this genus must be considered merely as preliminary to a more complete account which he expects to publish at a future time. In the meantime, it is hoped that the descriptions and illustrations here given may be of service to our profession, and aid in emphasizing the importance of the study of the histological structure of drugs.

The writer's thanks are due to Mr. Henry L. Clarke, of the University of Chicago, for securing for him authentic specimens of the bark of *Prunus Virginiana*.

DESCRIPTION OF FIGURES.

Fig. 1.—Transverse section of bark of *Prunus serotina* magnified 75 diameters. The specimen was from a stem only five or six years old. *a*, cork, probably secondary periderm; *b*, middle or green layer of bark; *c*, clusters of stone cells in inner portion of middle bark; *d*, compressed sieve tissue in the outer portion of bast layer; *e*, a medullary ray; *f*, mass of stone cells; *g*, fissure between medullary ray and bast; *h*, medullary ray; *i*, cambium zone; *k*, duct in mature wood.

Fig. 2.—Small portion of longitudinal section made well toward the cambium zone and parallel to it. Magnification about 75 diameters. *a*, crystal of calcium oxalate; *b*, a medullary ray cell containing starch; *c*, sieve tube; *d*, medullary cell.

Fig. 3.—Some of the sclerenchymatous elements from the same species, magnified 230 times; the longer of these cells, perhaps, to be regarded as bast fibres, or as transition forms between stone cells and bast fibres.

Fig. 4.—Starch grains from bark of *Prunus serotina*, magnified 1,200 diameters.

Fig. 5.—Cross-section of bark of *Prunus Mahaleb* magnified about 75 diameters. *a*, cork exfoliating from exterior surface; *b*, secondary cork formation farther interior; *c*, fissure in cortex; *d*, primary bast fibres in outer portion of bast layer; *e*, compressed sieve tissue; *f*, single bast fibre. (A few scattered bast fibres occur in the secondary bast in this species.) *g*, medullary ray; *h* compressed sieve tissue; *i*, newly formed bast; *k*, cambium zone; *l*, large duct in newly formed wood; *m*, wood of previous season.

Fig. 6.—Tangential section through bast layer of *Prunus Mahaleb*, showing medullary rays and compressed sieve tissue. Magnification about 230 diameters. *a*, compressed sieve tissue; *b*, crystal cell; *c*, ordinary parenchyma cell of medullary ray; *d*, compressed sieve tissue; *e*, fissure between medullary ray and sieve tissue.

Fig. 7.—Cross-section of outer part of bark of *Prunus Mahaleb*, showing mode of cork formation. *a*, outer layers of cork exfoliating at the surface and showing stratification lines. (The cork readily splits along these lines.) *b*, cortex or middle bark; *c*, cluster of primary bast fibres; *d*, secondary cork forming interior to the clusters of primary bast fibres; *e*, compressed sieve tissues. Magnification about 75 diameters.

Fig. 8.—Small portion of cross section of inner layer of stem bark of *Prunus Avium*, magnified about 230 diameters, showing arrangement of bast fibres. *a*, portion of medullary ray, well toward the outside of the bast layer: *b*, compressed sieve tissues; *c*, bast fibre; *d*, parenchyma cell; *e*, bast fibre, in oblique view.

Fig. 9.—Some of the sclerenchyma fibres as they appeared *in situ* in a longitudinal tangential section of the bark of *Prunus Avium*. Magnification, about 230 diameters. The more regular, slender and elongated fibres usually occur in masses.

Fig. 10.—Starch grains of *P. Avium* magnified 1,200 diameters.

Fig. 11.—Cross-section of the stem bark of *Prunus Pennsylvanica* magnified about 75 diameters. *a*, cork in layers, represented as separating from the middle bark, *b*; *c*, irregular or tortuous sclerenchyma fibres; *d*, medullary ray; *g*, fissure between medullary ray and bast; *h*, compressed sieve tissue; *i*, young bast tissues near cambium; *k*, cambium zone; *l*, a duct in the wood.

Fig. 12.—Portion of longitudinal tangential section of inner bark of *P. Pennsylvanica* magnified about 75 diameters. *a*, medullary ray; *b*, soft bast cell; *c*, bast fibre; *d*, crystal cell.

Fig. 13.—Starch from bark of *Prunus Pennsylvanica* magnified 1,200 diameters.

Fig. 14.—Cross section of stem bark of *P. Virginiana*, magnified about 75 diameters. *a*, periderm; *b*, outer cortex (collenchyma); *c*, *d*, tortuous sclerenchyma fibres; *e*, medullary ray; *f*, sclerenchyma fibre; *g*, large mass of secondary bast fibres; *h*, compressed sieve tissues separating masses of bast fibres; *i*, younger bast; *k*, cambium zone; *l*, duct in newly formed wood; *m*, mature wood.

CHINQUAPIN (CASTANEA PUMILA, MILL.).

By Henry Kraemer.

Presented to the Am. Pharmaceutical Association, Denver Meeting, 1895.

More than a year ago Berthelot claimed that with the progress of science the time was coming when synthetic foods, from the laboratory of the chemist, would supply the world with life, instead of the agricultural products which have been used from time immemorial. Beginning with the well-known syntheses of acetylene and urea, he would build up, after the manner of the chemist, the constituents that seem to be the active principles of the plant and animal foods. He believes, for instance, that by reason of the synthesis of the alkaloids of tea, coffee and cocoa, from urea, that these plants will soon follow like madder into economic eclipse. Dr. Wiley, in his retiring address as President of the American Chemical Society (December, 1894), calls attention to the fact that "no attempt is made to compute the cost of caffeine necessary for a single cup of Java, and that the fact that caffeine is only one of its constituents is naïvely ignored."

However beautiful the work and convenient the results may seem to be to Berthelot and others, it will be necessary for the whole animal creation to undergo marked changes in its digestive organs before they can be adapted to the use of synthetic or concentrated foods, or the so-called active constituents of foods. It is extremely doubtful if starch and glutin can take the place of wheat, or that any of the constituents of our garden vegetables could ever be produced in sufficient quantity to replace them; or that our fruits could, with due regard to the healthfulness of the race, ever be replaced by synthetic products; or, if myocene, sarcine, karnin, kreatin, etc., could ever replace meat. The human stomach must be nearly filled at least once a day for the individual to be healthy. It is only in the case of invalids that synthetic or concentrated foods will have any avail. Man must have not only carbohydrates, like starch and sugar; hydrocarbons, like fat and oil; nitrogenous principles, like proteids, fibrin, casein, gelatin; salts, like $Ca_3(PO_4)_2$, NaCl, KCl, etc., but he requires crude fibre, cellulose, etc., being the so-called inert constituents of plants, to assist digestion, even if they do not impart strength and life. One might as well talk of breathing oxygen alone, because the oxygen alone is required by the

blood in changing the hæmoglobin of venous blood to oxyhæmoglobin of the arterial food.

Ever since Joule demonstrated the mechanical equivalent of heat, physiologists have been at work to ascertain the number of foot-pounds of work which the different foods will yield. So that to the different kinds of food are assigned physiological functions; to carbohydrates and hydrocarbons is ascribed the power of begetting force, and from nitrogenous substances is obtained the source of supply in replacing the waste of nitrogenous tissues, while any excess assists the starch and oil in their province of keeping up animal heat. "After the supply of sufficient albuminoid matters in the food to provide for the necessary renewal of the tissues, the best materials for the production of internal and external work are non-nitrogenous matters, such as oil, fat, sugar, starch, gum, etc. When the work is increased, not so much extra meat, as vegetable food, or its dietetic equivalent, fat, is demanded." In view of these statements and facts, it seems to the author that any plant that is fairly rich in starch, oil and nitrogen is worthy of at least a record. The author refers to the fruit of the chinquapin (Castanea pumila, Mill.), to which he has devoted some attention.

Castanea pumila, Mill.,[1] has been variously called by systematic botanists: Fagus pumila, Linnæus; Fagus Castanea pumila, Marshall; Fagus pumila var. præcox, Walter; Castanea nana, Muhlenberg; Castanea alnifolia, Nuttall; Castanea vesca, Lesquereaux. It varies from a small spreading shrub to a small-sized tree (15 meters high, with a trunk 0·30 meters in diameter). It has a dark greenish-colored bark, marked transversely with whitish lenticels and elliptical patches of a lichen. The wood is light-colored and marked by broad annular rings. The summer wood contains several rows of large ducts. The young green branches are covered with minute one-celled trichomes. The bark is rather tough, bast fibres numerous and long, taste astringent, and is sometimes employed as a tonic. The leaves are elliptical, oblong or lanceolate, acute with rounded base, mucronate-serrate, upper surface smooth, lower surface marked by clusters of long one-celled trichomes. This tomentose character of the under surface of the leaves distinguishes the chinquapin

[1] Tenth Census of U. S., Vol. IX, 1880, entitled, Forest Trees of North America.

from the young chestnut. The leaves are 9 to 15 centimeters long by 3 to 6·5 centimeters at the widest portion.

The flowers are aments or catkins and are of two kinds. The lower are staminate, being 14 centimeters long, calyx 5 to 6 parted, stamens 5 to 20, filaments slender, anthers two-celled. The fertile flowers are above, fewer and are interrupted. The catkins are 6 to 7 centimeters long, usually one, sometimes two clustered together, with an ovoid scaly involucre, covered with trichomes, which in the fruit becomes coriaceous and beset with prickles, and is 4-lobed. Nut is solitary in the burr, ovoid, 11 to 16 mm. long by 7 to 12 mm. wide. The bees derive honey from the flowers during early summer (June).

The chinquapin grows[1] from Lancaster County, Pa., and the Valley of the Lower Wabash River, Indiana, south and southwest to Northern Florida and the Valley of the Neches River, Tex. It has been found in Southern New Jersey and the adjoining corner of Pennsylvania, along the Delaware River. In the Atlantic States it is reduced to a shrub and attains its maximum development further south. It grows on rich hillsides, borders of swamps, and is especially seen on the borders of roads, clearings, etc. It is suggested as suitable for an economical hedge. It is most common and reaches its greatest development in Southern Arkansas.

The wood of the chinquapin is light, hard, strong, cross-grained, durable in contact with the ground, and liable to check in drying. It equals that of the chestnut. In sp. gr. it is 0·5887; ash, 0 12 per cent., and weighs 36·69 pounds per cubic yard. It has the following strength and fuel value:

Approximate relative[2] fuel value	58·80
Coefficient of elasticity in kgms. per mm.	1,141
Ultimate transverse strength in kgms.	423
Ultimate resistance to longitudinal crushing in kgms.	7,923
Resistance to indentation to 1·27 mm. in kgms.	1,887

[1] Agricultural Department Reports: 1854, 410; 1860, 421; 1868, 281; 1875, 175.

[2](1) The fuel value is obtained by burning the wood in a combustion tube in a current of oxygen and determining the per cent. of C from CO_2, collected in the KOH bulb, and the H from the amount of H_2O found in the $CaCl_2$ tube. Then knowing the specific gravity and ash by the usual calculations for calorific value of fuel, the fuel value per kilogramme, or per cubic decimeter or approximate relative value of the wood, may be calculated.

(2) The strength of wood is ascertained by means of "testing machines,"

The nuts, or "chinquapins," as they are called, are much sought, and so soon as ripe are eagerly eaten by those who first see them. 88·116 gms. of whole nuts gave 28·785 per cent. of hulls and 71·215 per cent. of "meat" or kernel. The kernels were cut up and dried in an air bath at 110°, and were found to contain 18·17 per cent. of moisture.

For the determination of oil, 15 gms. of the powdered kernels were extracted in a Soxhlet extraction apparatus, with anhydrous ether, for eight hours. The contents were poured into a large platinum dish, the ether evaporated and the contents weighed.

Weight of platinum dish and oil	50,880
Weight of platinum dish alone	49,605
	1,275

The percentage of oil then on dried material was 8·50 per cent., or on the fresh chinquapin kernel 6·955 per cent. The starch was

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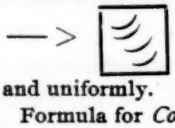
which may be either for small or large beams. The specimens are first slowly and carefully seasoned. In determining the *Resistance to Transverse Strain* they are generally made 4 cm. square, and are long enough to give the necessary bearing upon the supports. The supports are shod with flat iron plates, and set exactly one meter apart. The specimens are placed upright to eliminate the influence of this weight, and hydraulic pressure is applied by means of an iron rod, acting midway between the supports when the deflection is read. In these tests (see Vol. IX, 10th Census of the United States), the pressure was applied as indicated by the direction of the arrow



The pressure is applied slowly and uniformly. The first deflection was at 1,173 and the second at 1,141 kgms. Formula for *Coefficient of Elasticity* is

$$E = \frac{Pl^3}{4\triangle bd^3}.$$

The dimensions l, b, d, being expressed in mm. and P in kgms. The formula for *Modulus of Rupture*, is

$$R = \frac{3}{2}\frac{Pl}{bd^2}.$$

The dimensions l, b, d being expressed in cm. The modulus of rupture of Castanea pumila is 991, and the ultimate transverse strength in kilogrammes is 423.

(3) In the *Longitudinal Compression Test* the specimens were 4 cm. square and 32 cm. long. The specimens were introduced between the platform of the machine and pressure gradually applied until they failed. The figure given represents the number of kgms. required to cause failure.

(4) *Resistance to Indentation.* Specimens were 4 cm. square and 16 cm. long, and pressure was applied perpendicularly to the fibres. Upon the plat-

determined as follows: 2·000 gms. of the finely powdered kernels deprived of oil were put into a pressure bottle with 100 c.c. of water, and heated for eight hours at 130–140° C. It was then allowed to cool to 60° C., and 10 c.c. of HCl (sp. gr. 1·20) added, and sufficient water to make the bulk 100 c.c. The bottle was then heated at 60°–70° C. for two hours. The contents were then filtered, neutralized and made up to 500 c.c. A portion was titrated with Fehling's solution (5 c.c. = 0·50 glucose). 26·50 c.c. of chinquapin solution completely precipitated 5 c.c. of Fehling's solution, which, calculated, showed 47·17 per cent. of glucose. This was equivalent to 44·45 per cent. of starch in the dried kernels, or 36·37 per cent. on the fresh kernels.

A nitrogen determination was made by means of the combustion of 1·000 gm. of powdered chinquapin, and gave 25·2 c.c. of nitrogen. Then from the following data and formula the per cent. of nitrogen was determined:

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form of the machine they were indented with an iron punch 4 cm. square on its face, covering the entire width of the specimen and ¼ of its length at the centre. The results are different according to the direction of the grain, when, as in the previous illustrations, a pressure of 2,395 kgms. produces an indentation of 2·54 mm., whereas, when the grain is parallel 2,608 kgms. = 4·81 mm., producing a slight shearing of the fibres. The following comparative table will illustrate the value of these figures, and is taken from the Tenth United States Census, which is the only comprehensive work in timber physics ever undertaken on American timbers:

Coefficient of elasticity in kgms. on mm.	Ultimate transverse strength in kgms.	Ultimate resistance to longitudinal crushing in kgms.	Resistance to indentation to 1·27 mm. in kgms.	Species.
1,658	—	—	—	Larix occidentale.
1,141	423	7,923	1,887	Castanea pumila.
971	386	8,183	3,388	Quercus alba. [cana.
856	297	6,106	1,698	Castanea sativa var. Americ-
—	541	—	—	Quercus chrysolepis.
—	—	13,767	—	Rhizophora mangle.
—	—	3,395	—	Asimina triloba.
—	—	—	12,689	Canella alba.

$V = 25{\cdot}2$ c.c.

$t = 20{\cdot}5°$ C.

$B = 757.$

$f = 17{\cdot}4.$

$p = 0{\cdot}0012562.\quad V.\ \frac{1}{1 + (0{\cdot}00367.\ t)}.\ \frac{B - f.}{760}$

$p = 0{\cdot}0288.$

From this the per cent. of nitrogen on the natural or fresh kernels was calculated, and found to be 2·357 per cent.

One quart of chinquapins was bought in Asheville, N. C., on October 11, 1894, at 10 cents. (They were probably three or four weeks old.) This quart contained 729 chinquapins. These were kept until June 1, 1895, and yielded in all 166 worm-eaten nuts, being in per cent. 22·77. This showed that 77·22 per cent. were fit for planting or fit for eating, although a much larger per cent. are eaten at first, as the worm is not given time to develop.

The grub that feeds on the chinquapins is the larva (according to L. O. Howard, of the Division of Entomology of U. S. Department of Agriculture) of a Coleopterous insect belonging to the genus Balanius, and is probably either B. proboscideus or B. rectus.

Conclusions.—(1) The chinquapin contains the following:

	Per cent.
Fixed oil (sweet and bland)	6·955
Starch (resembling wheat)	36·37
Nitrogen	2·35

This analysis shows that it contains a fair amount of nutritive properties.

(2) The flavor of the chinquapin is equal to that of the chestnut, and is eagerly sought and eaten in the country where it grows.

(3) The chinquapin is limited in its natural range to the region from Pennsylvania and Indiana, to Florida, and southwestward to eastern Texas. It prefers a permeable, rich, rocky soil, but will endure almost any soil except a wet one. (Fernow.)

(4) It will yield fruit in the second or third year, at least, requires no care, and might be advantageously planted and improved by those who are "land poor," as yielding a profitable investment and immediate returns.

School of Pharmacy of
Northwestern University.

EXAMINATION OF ELM BARK, FLAXSEED AND MUSTARD FOR STARCH.[1]

By J. U. Lloyd.

Presented to the Amer. Pharm. Assoc., Denver meeting, 1895.

Owing to the alterations in our library building, necessitating the storing of its contents, it is impossible for me to refer to the literature connected with this subject. References thereto will, perhaps, be added later.

The immediate object is a consideration of the subject of starch in connection with the aforenamed substances, a subject now of great importance to Ohio pharmacists. The question is, does elm bark contain starch at all; do flaxseed and mustard, if free from starch-bearing seeds, ever contain starch, and is it practical in commerce to apply the rigid tests of the Pharmacopœia to ground flaxseed and powdered mustard?

In *Chem. Zeitung*, 1890, p. 688, the following statement is found, coming from Prof. Hilger, in Erlangen:

"Small quantities of starch grains, of various origin, if found in ground spices, should not, by necessity, detract from their being considered as honest goods in trade."

ELM BARK.

The inner bark of Ulmus fulva, Michaux (nat. ord. Urticaceæ).

In flat pieces, varying in length and width, about 3 mm. thick, tough, pale brownish-white, the inner surface finely ridged; fracture fibrous and mealy; the transverse section delicately checkered; odor slight, peculiar; taste mucilaginous, insipid.—U. S. P.

It will be observed that no chemical test is given by which we can be governed concerning adulteration of the powdered bark. In referring to other authorities, little information is to be found, and even their brief statements concerning the presence of starch do not agree. Since the larger share of elm is consumed as powdered elm, and since druggists do not powder it, but rely altogether on trade millers, the subject of simple tests and rules as to purity are now, in Ohio, at least, of great importance. In the face of conflicting reports made by advocates who claim that elm bark does not contain starch, and those who claim that it does contain starch,

[1] For valuable assistance in detail work, the thanks of the author are extended to Dr. Sigmond Waldbott.

these results are offered simply as voicing the result of my personal experimentation on this now important subject.

If a slab of dried elm bark be split longitudinally, and the exposed edges moistened with very weak iodine tincture, a light purplish-blue color, more or less prominent, follows, which disappears quickly. If the bark be previously moistened with dilute sulphuric acid, the blue color is quite permanent. The same is true when it is moistened with a dilute solution of iodine in iodide of potassium, acidulated with sulphuric acid. Ten specimens taken by me at random from a lot of Wisconsin bark, and others from Kentucky and Ohio, demonstrated that all of them would respond to the test, and I have found none that did not do so, although some specimens of bark contain more starch than others. If a thin shaving, not of the inner side of a slab of elm, be dropped into a dilute solution of iodine in iodide of potassium, made acid with sulphuric acid, the shaving will usually turn blue, or become streaked with blue, although, as the inner surface of the bark is often free from starch, the shaving must be from beneath the surface. In this connection it should be added that this starch-free layer is of varying thickness, sometimes being a mere film, again (seldom) forming the bulk of the bark. Under these conditions, it is to be presumed that enough starch must be present in powdered elm to make it respond to the iodine test.

To Detect Starch.—Powder the elm bark, and thoroughly mix 1 gramme with 100 c.c. of water, by rubbing in a mortar, the water being gradually added; then boil.

To 2 c.c. iodine test solution, U. S. P., add 8 c.c. 10 per cent. sulphuric acid.

Mix 1 c.c. of the iodine mixture with 8 c.c. of the cold mucilage; a clear, quite permanent blue color will be produced. If iodine tincture without acid be added to the mucilage, the blue color will be developed, but disappears quickly. If the mucilage is to be made of the whole bark, shave it transversely into thin shavings, put 1 gramme into a capacious mortar and rub constantly with 100 c.c. of boiling water, gradually added, until a thick mucilage results.

The coloration that results in presence of too much iodine is not bright blue, for if an excess of iodine is used, a shade of purple or brownish yellow results. It is essential that no excess of iodine be

employed, and, when the yellowish shade results, additional mucilage must be added to counteract the excess.

ASH.

Incineration of seven specimens showed the presence of 8·62, 9·13, 9·22, 7·64, 8·10, 8·08, 10·10 per cent. of ash respectively, the average being 8·69 per cent.; observed maximum, 10·10 per cent.; observed minimum, 7·64 per cent. Each of the foregoing results is the average of several incinerations of the same specimens of bark, which agreed very closely.

SUMMARY.

Elm bark contains starch, enough to respond to the iodine test, and this fact should be stated in the Pharmacopœia. It should also be stated that when powdered elm is boiled with water the mucilage, if acidulated with sulphuric acid, on the addition of dilute iodine solution, should turn blue, and retain its color for some time. Elm bark contains so little starch that, in my opinion, a comparative test can be easily devised that will determine any fraudulent admixture of starch, and in justice to the trade a method to detect added starch should be recorded in the Pharmacopœia. The Pharmacopœia should also limit the amount of ash.

Elm bark contains a natural constituent, capable of disturbing the iodine starch test, for if a blue solution, made by adding freshly prepared iodide of starch to water to distinct coloration, be mixed with its bulk of mucilage of elm, the mixture will be immediately decolorized. The blue color will be partly restored by the addition of dilute sulphuric acid.

According to preliminary experiments this phenomenon is most probably due to the presence of both tannin and an organic calcium compound, which may be isolated from the bark. Report on these constituents is reserved for the future.

FLAXSEED.

The seed of Linum usitatissimum, Linné. (nat. ord. Lineæ).

About 4 or 5 mm. long, oblong-ovate, flattened, obliquely pointed at one end, brown, glossy, covered with a transparent, mucilaginous epithelium, which swells considerably in water; the embryo whitish, or pale greenish, with two large, oily, plano-convex cotyledons, and a thin perisperm; inodorous; taste, mucilaginous, oily and bitter.

Ground linseed (linseed meal or flaxseed meal) for medicinal purposes should

be recently prepared, free from unpleasant or rancid odor. When extracted with carbon disulphide, it should yield not less than 25 per cent. of fixed oil.

The filtered infusion of ground linseed, prepared with boiling water and allowed to cool, has an insipid, mucilaginous taste, and should not be colored blue by iodine T. S. (absence of starch).—U. S. P.

In this connection, as no exception has been made to the statement concerning the proportion of oil, that substance is herein neglected.

As regards the starch, the statement has been made that immature flaxseed contains that substance, a point that I have had no opportunity to verify. With a view to establishing the fact as to whether commercial flaxseed contains starch, a number of samples of selected flaxseed were tested. In no case could starch be found.

Upon testing the ground flaxseed of the market, however, it was found that every specimen examined responded to the starch test, some contained starch in very large amounts, and it was not without surprise that the fact was shown that the ground flaxseed sold to my own establishment had been grossly adulterated and contained at least 20 per cent. of starch. Neither was it less of a surprise to find that flaxseed ground by responsible parties and offered as pure, and believed by them to be pure, gave a decided blue coloration, and would not conform to the demands of the Ohio Pure Food and Drug Commissioner. Upon investigation it was found that flaxseed is often mixed with such cereals as rye and wheat, and that growing fields of flax are often largely contaminated with volunteer cereals. In addition, the seed is often put into meal and flour sacks and becomes impure thereby. The farmer does not, cannot, separate these foreign seeds, the oil miller cares little, if at all, for the contamination, and hence, since linseed oil makers are the parties who produce the ground flaxseed of commerce, and grind for market the quality of seed they press for oil, it is readily seen that commercial ground flaxseed cannot be expected to withstand a searching starch test. Of course, these remarks do not apply to mixtures designed intentionally as adulterations. That flaxseed can be cleaned in quantities is, however, shown by the fact that in wholesale seed stores in Cincinnati I have succeeded in picking up flaxseed free from starch-bearing contaminations.

It is my opinion that if a universal demand arises for pure flax-

seed meal it will be followed by a trade supply that will conform to the starch test of the Pharmacopœia, but naturally at increased price.

The pharmacopœial test is, I believe, objectionable by reason of the unnecessary direction to filter the infusion, which, owing to its mucilaginous nature, is troublesome to say the least. It may also be made more specific as to details, and, owing to the growing importance of this subject, nothing should be left to conjecture.

The test as I apply it is as follows:

Boil 1 gramme of ground flaxseed with 20 c.c. of water, and cool.

Mix 0·2 c.c. test solution of iodine, U. S. P., with 10 c.c. of 10 per cent. sulphuric acid.

To 8 c.c. of the flaxseed mucilage add 2 c.c. of this iodine compound, when, if starch is present, a blue coloration will result. As little as 0·5 per cent. of starch is indicated by a strong reaction.

An admixture of but 0·3 per cent. of starch is easily recognizable by this iodine test. Even the presence of as little as 0·1 per cent. of starch may also be recognized by making the mucilage more concentrated, using only 10 c.c. of water, instead of 20 c.c., to 1 gramme of flaxseed.

MUSTARD.

Free from starch.—U. S. P.

If commercial mustard seed be examined it will be found, as a rule, mixed with foreign seeds. Among these are to be found starch-bearing seeds, especially the seed of Chenopodium (American wormseed), this being often present and containing much starch.

If this mixed mustard be powdered and tested by the usual iodine method with small amounts of iodine, it will be found, even in the presence of much starch paste, that the reaction will be indistinct or evanescent, if it develop at all. This is due to the action of iodine on volatile mustard oil. In this connection it may be said that when a few drops of oil of mustard are stirred into an excess of iodized starch mixture, the blue coloration will soon be removed.

As a result of a series of experiments that were made in order to arrive at an expeditious method to eliminate the iodine-absorbing power of mustard oil prior to the testing for starch, the following process gave the greatest satisfaction:

Put into a large test tube 0·5 gramme of the ground mustard seed, add 8 c.c. of water and 1 c.c. iodine test solution, U. S. P. Boil until the brown color has disappeared. Decant, cool the decanted liquid, and add, by means of a pipette, *one drop* of the iodine test solution, U. S. P. If as little as 0·1 per cent. of starch be present, a distinct and quite permanent blue or greenish-blue color will appear.

If the principle of boiling the infusion of mustard seed with the iodine solution be not adhered to, the starch reaction will be evanescent, even in the case of gross admixtures of flour.

As the Pharmacopœia demands that no starch be present (and I can find none in pure mustard seed), it should be shown explicitly how the presence of starch can be determined.

GENERAL SUMMARY.

Elm bark contains starch.

Flaxseed and mustard, both white and black, free from admixture, do not contain starch.

The presence of small amounts of some foreign seeds that are difficult to separate, and of grains of cereals, are common in both flaxseed and mustard, and generally carry sufficient starch to make the powder respond to starch tests, if properly applied.

In the case of elm bark, the blue coloration disappears very quickly unless acid is added. After this blue color has faded, it can be partly revived by the addition of sulphuric acid.

With mustard, the blue color also disappears, if an insufficient amount of iodine be added, because the latter is readily assimilated by the volatile oil of mustard, even in the presence of a large amount of starch. Sulphuric acid does not revive the blue coloration; but previous heating with an excess of iodine test solution saturates the mustard oil, and renders the starch reaction quite permanent.

With flaxseed, the blue coloration of starch remains for some time, but in contradistinction to the behavior of mustard, an excess of iodine must be avoided, in order to obtain the pure blue color of iodide of starch. In commerce, ground flaxseed is not, so far as I know, supplied starch-free, but it can be easily obtained without any intentional admixture. Ground mustard now and then is pure, but, owing to unintentional contaminations, it usually responds to the

starch test, if properly applied. It can easily be purchased free from adulteration, but not necessarily entirely free from starch-bearing seeds.

In no case is it desirable to attempt to filter any of these mucilages, the Pharmacopœial directions to this effect being, in my opinion, objectionable.

TARAXACUM ROOT AND TARAXACIN.

By L. E. Sayre.

Presented to the Amer. Pharm. Assoc., Denver Meeting, 1895.

As a continuation of the investigation mapped out for myself a few years ago in connection with taraxacum, and reported upon in 1893 and 1894, I desire at this time to present the results of further work during the past winter in the same direction. It may be remembered that an effort has been made to determine the variation in the root at different seasons of the year, and to determine whether the valuable constituents are to any great extent altered by the application of a low heat, such as might be used in drying the fresh drug.

During the past year an effort has been made to determine the nature and characteristics of the so-called bitter principle—taraxacin—and to this end my investigations have been chiefly directed. The first difficulty in isolating the active principle lay in the separation of it from the extraneous matter with which it is always contaminated when its colorless aqueous solution is evaporated. This extraneous matter was referred to in a former paper (*Proceedings of A. Ph. A.*, 1893, p. 78), when it was stated that all attempts to obtain the bitter principle in a crystalline form, free from admixture of brownish-red extractive, had been unsuccessful, and what was reported as taraxacin in the analysis was this crude bitter principle containing this extractive.

It seemed impossible to separate the small, needle-like crystals from the resin-like globules of other uncrystallizable material seen under the microscope, and whether these uncrystallizable, amorphous globules of extractive, or the crystals, were actually the bitter principle, it was almost impossible to tell. My efforts have been directed towards this particular problem—how to obtain the taraxacin in the pure state. If it be a crystalline body, how can

this body be separated from the above-mentioned amorphous substance or substances? For help in the work I am indebted to Mr. A. B. Clarke, a student in the School of Pharmacy of the University of Kansas.

A record of the work will show, probably, that a separation of the bitter principle has been accomplished, and in the present paper an attempt will be made, not only to show this, but to make clear the various steps in the process, so that others may be able to take up the subject, or follow the ground gone over, and thus be able to verify or disprove the statements made herewith. At the same time, an attempt will be made to offer a process for the separation of the acrid principle which exists in the root.

In the work during the year, the various preparations of the drug were used as starting-points, viz.: the chloroformic extract, the extract and the fluid extract. It is unnecessary to take up each one of these divisions in detail and refer to the many failures and the causes of them. Reference will be made to such parts of the work as yielded results which I desire to record for the benefit of those who will, at a future time, wish to verify it.

Coloring Matter.—A point worthy of note has been hinted at in a former paper, namely, that the root, at a certain time in the late fall, seems charged with a coloring matter almost entirely absent at other seasons. On going over this part of the work again this year, I found that the October root was of a much higher color, and contained this peculiar coloring principle, which was entirely absent in the root collected in September. This coloring principle was obtained nearly pure by dissolving it from the chloroformic extract with alkaline water, and precipitating it from the alkaline solution with an acid. It is very sensitive to acids and alkalies; with the former yellow, and with the latter a deep red color is produced.

Acrid Principle.—One ounce of the extract was mixed with clean white sand, and dried in an oven at a temperature of 65° C., and powdered. This powdered extract was very hygroscopic, taking up water and becoming caked together when allowed to stand in the air but a short time. The powdered extract was placed in a continuous extracting apparatus and treated with chloroform for ten hours. The chloroformic extract was nearly colorless. The heat used in the manufacture of the extract seemed to have ren-

dered most of the coloring matter insoluble in chloroform. There was, however, a small amount in solution, which became visible upon concentration, and on complete evaporation a yellow mass, of pasty consistency, remained, having an acrid and very bitter taste. The residue was dissolved in water, and one-third of the yellow solution placed in a vacuum desiccator and allowed to evaporate. This gave no crystals, but the residue was highly colored, and had an odor resembling caramel. This was again dissolved in water, and shaken with absolute ether. The ether was then drawn off, and, on evaporation, left a residue which was not crystalline, but had an intensely sharp, acrid taste—not bitter.

Taraxacin.—Four ounces of a fluid extract, prepared by repercolation, were diluted with an equal bulk of water, and a dilute solution of subacetate of lead added, until no further precipitation was produced. The precipitate was mixed with water, and hydrogen sulphide passed through the mixture, until the lead was all deposited in the form of sulphide. The mixture was then filtered, and the filtrate evaporated to dryness on a water bath. The residue showed no signs of bitterness, making it evident that the bitter principle had not been precipitated by the subacetate of lead.

The first filtrate from the precipitate formed by the subacetate of lead was then taken and freed from lead by passing hydrogen sulphide through the solution and filtering out the lead sulphide formed. The filtrate was then evaporated to dryness, leaving behind a yellow, pasty mass of intensely bitter and acrid taste. The mass was mixed with sand and dried in an oven at 55° C. for three days, but the residue did not dry sufficiently to be powdered. It was divided into small particles and macerated in chloroform. The chloroformic extract, on being evaporated, left a large crop of crystals nearly free from foreign matter. The residue was very bitter.

This bitter residue gave glucosidal reactions, but when the drug was treated by the lime process for the separation of glucosides—viz.: the powdered drug mixed with freshly prepared milk of lime and evaporated to dryness on a water bath and the residue extracted with alcohol—no evidence of the bitter principle could be found in the residue after evaporating the alcohol.

Of the processes employed in separating the taraxacin thus far, the one using the solution after precipitating with subacetate of lead is by far the most satisfactory; but in any of the processes it

is necessary to use a large amount of the drug, as the principle exists in the root in very small quantities (about 0·05 per cent.).

It was found during the investigation that the acrid principle existing in the root could be separated from the bitter principle by shaking an aqueous solution of the chloroformic extract of the extract with absolute ether, drawing off the ether and allowing it to evaporate, when a yellowish mass, having a very sharp, acrid taste, remained. This residue dissolved in water and was acid to litmus paper. The relative amount of this acrid principle contained in the drug was not determined, but the percentage is very small.

It is now thought that a plan has been mapped out by which future investigators, using large quantities of the drug, will be able to completely isolate the bitter principle, or taraxacin, from taraxacum root, and by elementary analysis determine its ultimate composition. Fifty pounds of the drug have been extracted with chloroform, and during the next winter it is hoped this work will be fully accomplished.

BRITISH PHARMACEUTICAL CONFERENCE.

The thirty-second annual meeting of this Association was held at Bournemouth, England, July 30 to August 1, 1895, inclusive. For the following information we are indebted to the *Pharmaceutical Journal* and the *Chemist and Druggist*, in their issues of August 3d.

After the usual welcome by the city authorities, the address of the President, N. H. Martin, claimed the attention of the audience for some forty minutes. Because of President Martin's habit of saying something original, and without the usual sugar-coating, quite a large audience had assembled to hear his address, and they were not disappointed, for he succeeded in placing some truths before them in such a clean-cut manner that he drew out considerable enthusiastic applause.

The burden of the address was *pharmacy*, and the speaker handled it in a masterly manner. A few sentences from his remarks on the question of pharmacy being a trade or profession will show that he takes issue with those who are disposed to give up the professional idea.

> At the present moment we are bound to acknowledge that true pharmacy in this country is in a most unsatisfactory condition. It is between a false assumption and pretence of science and the whirlwind of modern trade, and the practice of pharmacy as a separate calling is in danger of being lost altogether. By many of those who should be the leaders and defenders of pharmacy, the word "pharmaceutical" is often flouted and sneered at, and treated as an adjective, which no man in advance of the middle ages would dream for one moment of applying to anything scientific. Some of these men openly say that they do not know such a thing as "pharmaceutical" chemistry, and that there is no such thing as "materia medica," chemistry and botany having eviscerated that subject long ago. Such remarks are caught up by men who never in their lives spent a thoughtful hour in the pursuit of true science, and it comes to be considered the acme of wisdom to sneer at the science which is practical in the fulfillment of an essential duty. I believe pharmacy to be an entity which is

useful in a civilized state of society, the duties and landmarks of which are as capable of definition as medicine, biology, physiology and many other well-recognized divisions of knowledge. I am aware that it has no claim to stand alone as an abstract science, but must depend on botany and chemistry for the elucidation of many of its problems, but in this respect is it not on a par with the other divisions I have mentioned? Medicine, of course, is dependent on even a larger number of the various branches of science than pharmacy; but have biology or physiology any claims to be considered as abstract sciences? Are not their very names indicative of the want of knowledge of those who study them, and how dare any man say that a biological investigation is science, and worthy of all the honor which societies can bestow, while a pharmaceutical investigation must conceal its very name under some other title?

As to the whirlwind of modern trade, poor pharmacy is threatened and is in grave danger of being entirely overwhelmed by it. In my address last year I pointed to the fact that pharmacy was attempting the impossibility of posing as a profession while it practiced the baser methods of trade; and the answer from the headquarters of the craft, which can be read by all men in the altered features of the *Pharmaceutical Journal*, is that pharmacy is content to be a trade, and the Council of the Pharmaceutical Society the leaders of a trade Association."

The President then called attention to the fact that the formation of local associations had been recommended as a panacea for the ills of pharmacy, but he wished to point out the weakness of such a remedy.

The *duties of pharmacy* then claimed the speaker's attention; after the duty of dispensing, which should be assigned entirely to the pharmacist, there should be some time given to the Pharmacopœia and to research.

The scope of the Pharmacopœia "should be to provide the greatest number of the average medical men and pharmacists with accurate descriptions of all the drugs and preparations which are in reasonably common use at the time of its publication, so that they may judge of the identity and quality from the pharmacopœial description."

The error should be in having too many rather than too few formulas for stable and reliable preparations of drugs.

The omissions from the Pharmacopœia provide the happy hunting-ground for the cupidity of the empiric and the quack in pharmacy.

In regard to pharmaceutical research, it was declared "the duty which is incumbent upon every man to do something either to increase the aggregate amount, or to render more exact and scientific the knowledge which is in the possession of his calling, cannot be too seriously taken to heart by pharmacists."

The balance of the remarks on this topic and the conclusions will scarcely bear condensation, they had previously been well condensed by the speaker, and every sentence is worthy of the careful consideration of pharmacists in this country as well as in England.

The president having completed his address, the Executive Committee, the Treasurer and the Formulary Committee reported, which brought the Conference, in less than two hours, to the reading of original communications.

The first paper read was on

SANDAL WOOD OIL.

By E. J. Parry.

In attempting to devise a quantitative method for the determination of the value of this oil, the author found that the best plan was to ascertain the amount of santalol it contains. Other alcoholic bodies present are expressed in terms of santalol. The alcohol is converted into an acetate, and the amount of acetic acid present in the acetylated oil determined, the result being expressed in terms of potash necessary to saponify the oil. Tables were given to

show the amount of potassium hydrate required to saponify five specimens of sandal wood oil, and the same after acetylation, as well as the specific gravities and iodine absorption numbers of the different samples. It was suggested that the results prove that the greater part of the aldehyd in the oil comes over in the earlier fractions, and that the saponifiable oil of highest boiling point increases in quantity as distillation proceeds, thus accounting for increase in specific gravity. The constitution does not appear to be materially altered by acetylation, and this process, followed by saponification with potassium hydrate, serves to detect the presence of cedar wood oil, the amount of which can also be approximately determined in a mixture of the oils.

NOTES OF A RESEARCH UPON IPECACUANHA.

By R. A. Cripps.

The ether extract of the drug contained a trace of an alkaloid, oleic and palmitic (?) acids, neutral fat, wax and resin. The subsequent alcoholic extract was partly dissolved by chloroform whilst acid, and partly by ether and chloroform after being rendered alkaline by ammonia. The acid chloroform extract contained some alkaloid, but this requires further investigation. By fractional precipitation the whole of the alkaloid in the ether extract was separated, and two of the extreme fractions were converted into gold and platinum double salts, which proved to be practically identical in composition, the figures agreeing closely with those required by emetine (Paul). It was concluded that emetine was the only ether-soluble alkaloid. No definite results have yet been obtained with the alkaloid soluble in chloroform.

REPORT ON THE STRENGTH OF COMMERCIAL SAMPLES OF THE ALKALOIDAL TINCTURES OF THE BRITISH PHARMACOPŒIA.

By E. H. Farr and R. Wright.

In their paper the authors reported the results of an inquiry into the strength and quality of commercial tinctures as dispensed by pharmacists. A very wide range in alkaloidal value was disclosed, some of the tinctures, even those of opium and cinchona, which are directed to be made of standardized drugs, being twice or three times the strength of others. The tinctures of nux vomica never exceeded the official standard, but frequently fell below it, and those of conium were in most cases absolutely worthless, only one sample showing indications of having been made strictly according to the Pharmacopœia instructions.

COD LIVER OIL CONSTANTS.

By E. J. Parry and C. E. Sage.

The published constants of cod liver oil vary so considerably that the authors have thought the matter of sufficient importance to obtain a number of authentic specimens and determine some of their most useful analytical data.

The limits of specific gravity in the ten samples examined were ·9227 to ·9291; the saponification figures varied from 17·90 to 19·34 per cent. of potassium hydrate, and the iodine absorption figures from 153·5 to 168·4 per cent., confirming the results of Thompson and Ballantyne. The amount of free fatty acid, calculated as oleic, varied from 0·34 to 0·60 per cent.; their melting points from 21·5° to 25°, and their iodine absorption figures from 164·9 to 170·1. The mean molecular weights of the acids varied from 287·6 to 292·5.

THE OIL OF SCOTCH FIR, AND OTHER PINE OILS.

By John C. Umney.

The results of the investigation showed that (1) the rotation of true oil of Scotch fir (*Pinus Sylvestris*) may differ, either according to the period of the year at which the material for distillation has been collected, or to the conditions of climate and soil under which the fir has grown, although it should not exceed 20° in either direction in a 100 mm. tube; (2) that the specific gravity of the oil should not fall below ·880 at 15°; (3) that a very considerable portion should distil above 185°; (4) that not more than 15 per cent. should distil below 170°.

The other pine oils examined were those from *Abies Canadensis*, *Abies excelsa*, *Picea vulgaris* and *Pinus pumilio*.

STERILIZED SURGICAL DRESSINGS.

By Edmund White.

The author suggested that the sterilizer should be modified in such a way as to prevent the water which collects in the steam pipe from being blown into the apparatus when the steam is first turned on. A perforated plate should be placed over the orifice of the steam pipe where it enters the sterilizer, so as to secure the even distribution of the steam. The pressure in the sterilizer should not exceed 10 to 15 pounds per square inch, the steam being turned on slowly, after the dressings are placed in position, until the required pressure is attained. In conclusion, attention was called to a kind of cellulose wadding, made by the disintegration of pine wood, which had proved very satisfactory as an aseptic dressing.

THE WEIGHTS AND MEASURES OF THE BRITISH PHARMACOPŒIA VERSUS THE METRIC SYSTEM.

By William Elborne.

This paper was a summary of the often advanced arguments against the introduction of the metric system.

THE VOLUMETRIC SOLUTIONS OF THE BRITISH PHARMACOPŒIA.

By William Elborne.

It was pointed out by the author that the official volumetric solutions are, as a group, not entitled to the designation "standard solutions," inasmuch as the generally accepted nomenclature and standard of chemical equivalence are not uniformly adopted in their preparation.

REMARKS ON THE BRITISH PHARMACOPŒIA, WITH REFERENCE TO SECURING THE MORE GENERAL USE OF THE WORK AND RECOGNITION OF AN IMPERIAL CHARACTER.

By Charles Symes.

In extending the scope of the Pharmacopœia, it is necessary to bear in mind that the book is not only employed in all British possessions, but also in other places under British influence. In Africa, as far up country as Johannesburg, pharmacy is practiced much the same as at home, and the British Pharmacopœia is more used than any other. It is also used in Brazil, but not so much as the French Codex, the Formulario e Guia Medica of Chernoviz being used more than either of them, not merely because it is published in the Portuguese

language as there spoken, but on account of its containing some particulars concerning native drugs, therapeutical notes, and other matters of interest to the medical profession.

This raises the question of what the next British Pharmacopœia should comprise. Pharmacists should undoubtedly be appointed on the Pharmacopœia committee. Whilst the statement of proportions, according to the metric system, will be appreciated by many, it may also be found useful to give the equivalents of the doses in the same way.

A secondary list of new drugs still under trial, and of old ones becoming obsolete, might also prove an acquisition, and help to avoid too frequent changes in the body of the work.

RECOVERY OF ALCOHOL FROM TINCTURE MARCS.

By F. C. J. Bird.

The recovery of alcohol from drug residues has always been a tedious and somewhat expensive method. By the use of a water bath and a cone-shaped condenser, the author showed that he was able to recover all his alcohol by slowly heating it at 60° C.

SYRUP HYPOPHOS. COMP. B.P.C.

By W. A. H. Naylor.

The odor of sulphuretted hydrogen was stated by Bird, at the Conference last year, to be due to the action of free hypophosphorous acid on sulphates. In the present paper, however, it was considered to be due to the acid on sulphites. The results of the examination of a number of samples of the commercial syrup showed that phosphites were present in all but one. When made with commercially pure materials, the syrup can be stored in bulk in glassware, for three or four weeks, without undergoing change. To prolong the period during which it will remain bright, it was recommended that 80 grains of potassium citrate be added to each pint.

NOTE ON A SPURIOUS SAMPLE OF TOLU BALSAM.

By J. Oldham Braithwaite.

This sample differed from genuine balsam of tolu in its behavior with carbon disulphide, and the saponification equivalent of the insoluble residue was found to be very low, approaching that of copaiba resin. It was suggested that the following addition might, with advantage, be made to the characters and tests of tolu balsam in the Pharmacopœia: "When 5 parts are gently warmed with two successive portions of 25 and 10 parts, respectively, of carbon disulphide, and the solvent decanted into a tared flask, the residue on distillation should be distinctly crystalline, and every 1,000 parts of this residue should require for its saponification not less than 300 parts of potassium hydrate."

THE QUALITY OF COMMERCIAL POWDER OF IPECACUANHA.

By Henry G. Greenish.

In a paper read at an evening meeting of the Pharmaceutical Society, in February last, Professor Greenish showed how ipecacuanha root and stem may be distinguished in the state of powder, and also how Brazilian and Carthagena ipecacuanha may be distinguished in the same condition. It became manifest, therefore, that the ordinary processes of assay might be usefully supplemented

by a microscopical examination of the powdered drug. A chemical assay alone is insufficient, for, as pointed out, it is not enough to know that a powdered ipecacuanha contains 2 or 2·5 per cent. of alkaloid capable of being extracted by a particular method, and yielding the emetine reaction. Sawdust mixed with the alkaloid obtained in de-emetinising ipecacuanha might then be regarded as complying with the requirements to be demanded of a good sample.

The two assumptions commonly made when powdered ipecacuanha is valued by the result of the assay—first, that the alkaloid extracted consists of nothing but the alkaloid pre-existent in the drug; secondly, that such alkaloid is the sole active principle in the drug and alone regulates its physiological effect—may be either or both incorrect. The liability to error is much diminished if the freedom of the powdered drug from foreign admixture is previously determined by the microscope, but before such an examination of a powdered drug can be undertaken with any prospect of obtaining reliable results, the pharmacist must familiarize himself with the structure of the genuine drug.

A minute examination of a number of different commercial samples of the genuine drug having been made by the author, he next obtained thirty-two samples of the commercial powdered drug from pharmacists in London and the provinces, and carefully examined them, with a view of ascertaining whether they consisted of genuine ipecacuanha, also from what commercial variety they had been prepared, and the commercial quality of the drug that had been used, particular attention being directed to the presence of stem and of an undue proportion of wood. The results were embodied in a table which shows that none of the samples were adulterated with foreign starch or with foreign drugs. Twelve samples proved to be powdered Carthagena ipecacuanha, and amongst the twenty classed as Brazilian some few may have been in reality Carthagena, while amongst those classed as Carthagena, some may be mixtures of Carthagena with Brazilian. Only one sample could claim to be regarded as a powder of really good Brazilian root free from stem, and it was asserted that much of the powdered ipecacuanha sold by pharmacists contains an undue proportion of stems. Though free from gross adulteration, therefore, the powdered ipecacuanha of English commerce appears to be comparatively rarely prepared from high grades of Brazilian root.

A STILL ALARM.

By N. Crossley Jones and P. W. Jones.

This consisted of a float to be attached to a receiver, so that when the liquid in the receiver reached a certain height, the float rising would move a lever with which it is connected and complete an electric circuit.

ACETIC EXTRACT OF IPECACUANHA.

By F. C. J. Bird.

This was a record of experiments made with the view of reducing the great alkaloidal loss entailed by the Pharmacopœia method of making wine of ipecac. Paul and Cownley have demonstrated that both emetine and cephaelene are affected when their acetic solutions are evaporated to dryness and exposed to the temperature of the water bath for any length of time. Bird proposes a triple method of extraction; first, percolation with alcohol, then with acetic acid, and, finally, with diluted acetic acid; evaporating the menstruum and drying the extracts separately, then mixing.

The loss of alkaloid in the official method is 26·8 per cent., but by this process it is reduced to 8·7 per cent.

TINCTURE OF LOBELIA.

By J. F. Liversedge.

In the British Pharmacopœia it is stated that lobelia should be reduced to No. 40 powder for preparing the tincture, but the author found that only about 40 per cent. could be made to pass through a No. 40 sieve, working on the small scale, and with a pestle and mortar. In view, therefore, of the fact that pharmacists might be in doubt whether, under the circumstances, they should use the specified quantity of the drug powdered as finely as possible, or take a larger quantity and make up the full weight from the powder that passes through the sieve, he investigated the point whether the latter would yield stronger tincture or not. As a result of experiments, it was found that a tincture prepared from the fine powder contained rather more than one and a half times as much extractive and alkaloid as one prepared from the stalks left on the sieve. It was suggested, therefore, that the official instructions should be so far modified as to permit of the tincture being prepared by pharmacists, on the small scale, with ordinary appliances. The same suggestion was also applied to the formulæ of the other B. P. tinctures.

GLYCERIN TINCTURE OF CINCHONA.

By Frederick Davis.

The purport of this paper was merely to show by experimental data that a better tincture of cinchona may be prepared by using glycerin with alcohol for the exhaustion of the bark than by employing alcohol alone.

The reading of papers having been disposed of, after occupying nearly four sessions, the question of next year's meeting was brought up, and it was decided that the Conference should meet at Liverpool in 1896. The following officers were then elected:

President, William Martindale; Vice-presidents, Michael Carteighe, J. Laidlaw Ewing, W. Hayes and M. Conroy; Treasurer, John Moss; Honorary General Secretaries, W. A. H. Naylor and F. Randsom; Honorary Local Secretary, T. H. Wardleworth; Executive Committee, F. C. J. Bird, E. H. Farr, E. M. Holmes, Stewart Hardwick, W. F. Wells, Edmund White, R. Wright, George Coull and J. Smith.

AMERICAN PHARMACEUTICAL ASSOCIATION.

The forty-third annual meeting of the American Pharmaceutical Association was held in Denver, Col., from Wednesday, August 14th, to Wednesday, August 21, 1895.

On Tuesday, August 13th, members of the organization and their accompanying friends began to arrive in Denver from all parts of the United States, with the exception of the Pacific Coast; this section being poorly represented, probably because of the inability of the Transportation Committee to secure a reduction in railroad rates.

En route to their destination, the several parties of delegates, which traveled mostly by special train, were tendered entertainments by the pharmacists of the cities through which the route lay. Notable among the special attentions

which were lavished upon the travelers was the St. Louis welcome. In this city the delegates from the East arrived at 7.15 A.M., on Sunday, August 11th, and from that hour until late in the evening of the same day, the resident pharmacists displayed a hospitality of the true Western stamp. The committee escorted their guests to the Planter's Hotel, where an informal reception was given them, from 9.30 to 10.30 A.M. At the close of the latter entertainment, the party was conducted to the plant of the Anheuser-Busch Brewing Association, where they were permitted to inspect the machinery and apparatus employed in the production of malt beverages. From the brewery the visitors returned to their hotels, and, after a midday repast, were driven in carriages across the famous St. Louis bridge, from which a magnificent view of the Mississippi River was obtained. Returning to the Missouri side, the procession passed through the main thoroughfares of the city, as also through some of the quiet and beautifully cultivated private streets, and through some of the smaller parks to the destination of the drive, the Cottage in Forest Park. At the latter place a lunch was served and the speech-making of the day inaugurated—Adolph Braun representing the St. Louis committee and Prof. J. P. Remington replying for the delegation.

At Jefferson City and also at Kansas City the delegation was cared for by the local pharmacists. A floral design of the mortar and pestle was presented to them at the first place, and at the last-named place the party was tendered a cable car ride over the hills of the city.

Besides these given entertainments, which were participated in by the Eastern and Southern delegations, other evidences of welcome were shown by the pharmacists of Lawrence, Topeka, Emporia, Newton and Hutchinson—towns through which the Chicago delegation passed.

The several special trains were met by members of the Denver local committee of arrangements, who were enabled to instruct the travellers regarding hotels, sight-seeing and other matters of general interest and concern.

The Association had its headquarters at the Brown Palace Hotel, in the ordinary of which structure all of the business meetings were conducted.

FIRST GENERAL SESSION.

The first general session of the Association convened on Wednesday, August 14th, at 3.30 P. M. The meeting was called to order by First Vice-President C. M. Ford, who, after speaking of the good attendance, introduced Governor McIntire, of Colorado. The Governor extended the hospitality of the State, and referred to the importance of the business that the Association had met to transact. The Mayor of Denver, Mr. McMurray, was next introduced by Vice-president Ford. A hearty welcome to the city was given the members by its executive. President Simpson then introduced Second Vice-president J. N. Hurty, who replied to the courtesies of the previous speakers.

Vice-President Hurty then took the chair, while the President, William Simpson, of Raleigh, N. C., read his annual address. He referred to the small number of graduates, as compared to the large number of pharmacists, advised more education and training, and suggested that the Association recommend the standard of education necessary for entrance to the ranks to be made the same as that required for entrance into high schools; and that each State Board of Pharmacy be informed of the Association's attitude in this matter. With

such a regulation in force, the President expressed himself to be of the opinion that the State examinations, through their test of the technical qualifications of candidates, would be enabled to exclude the incompetent. The address was referred to a committee of three, consisting of Messrs. Alexander, Remington and Alpers. The minutes of the meeting which was held last year at Asheville, N. C., were read and approved. The report of the Council, which had held its first session at 9.30 in the forenoon, took the same course. The reports of numerous committees were read by title, and, without particular comment in most cases, were accepted. The Permanent Secretary, Prof. Caspari, reported having received the credentials of delegates from twenty-six state associations, eleven colleges of pharmacy, four alumni associations, three schools of pharmacy connected with universities, and five county pharmaceutical associations. Secretary of Committee on Membership, Kennedy, read his report, which embodied a suggestion to rent a deposit-box in Washington, D. C., and also a suggestion to stamp the volume of Proceedings with the official seal of the organization. He reported the application of 214 new members, and these were invited to complete their membership by paying the fee and signing the constitution. The applicants were from almost every section of the United States.

A recess of five minutes was then granted, that the members might select their representatives for the nominating committee. When the Permanent Secretary called the roll of States at the end of this intermission the following responded: Alabama, Arkansas, Colorado, Florida, Georgia, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maine, Maryland, Masssachusetts, Michigan, Minnesota, Missouri, Nebraska, New Jersey, New York, North Carolina, North Dakota, Ohio, Pennsylvania, South Carolina, Texas, Virginia, District of Columbia and the province of Quebec. The Nominating Committee decided to meet immediately after the session adjourned. In addition to the nominators from the states, the President appointed at large, Messrs. Ebert, Remington, Gordon, Alexander and Hurty. It was moved and carried that the reading of the reports of the permanent Secretary and Treasurer be deferred until the second general session.

Just what to do with the names of delinquent members in the Proceedings was a subject of considerable discussion and confliction of ideas for some time. The matter was, however, finally referred to Council.

The Permanent Secretary read invitations from pharmaceutical and business organizations in Montreal, Canada; Hot Springs, Ark., and the Twin Cities—Minneapolis and St. Paul, Minn. All of these places were anxious to have a visit from the Association next year. The president appointed Messrs. Frost, Morrison, Thompson, Watson and Legendre a committee on time and place of next meeting. The invitations were referred to this committee.

On motion the session adjourned until 10 o'clock the following day.

At 9 P.M. on Wednesday, August 14th, a general reception was tendered the members of the Association and their families by the Colorado Pharmacal Association in the parlors of the Brown Palace Hotel. President Arcularius, of the State organization, welcomed the guests, and was answered by Prof. J. M. Good on the behalf of the American Association.

SECOND GENERAL SESSION.

Thursday, August 15th.—After the meeting had been called to order, the minutes of the preceding day were read and approved. The report of the Per-

manent Secretary was also read and referred to the Publication Committee. The Permanent Secretary stated that the library of the Association was not a valuable one, that a large number of the serial publications which it contained were not near enough complete to be especially useful, and that a great part of the library, consisting of pamphlets and similar books, was really not worth the storage that the Association would in time have to spend on it. It was moved and carried that the Association donate such books, pamphlets, circulars, etc., as were deemed unneeded by it to the library of Messrs. Lloyd Bros., of Cincinnati. For this donation Prof. J. U. Lloyd thanked the meeting in the name of every pharmacist that is yet to come, stating that the library is to be devised to some educational institution. The Permanent Secretary thought that the number of back volumes of Proceedings that the Association now had, might, with propriety, be reduced. Prof. Hallberg moved that the price of back numbers be reduced still more, stating at the same time that he would like to complete his set, and that he thought the members should be permitted to do so before other disposition was made of the volumes. It was evident from the interest displayed that many held Prof. Hallberg's views, and, like him, wished to avail themselves of an opportunity to add to their libraries.

It was suggested that a price list be published in the various pharmaceutical journals in order that members and others might be instructed in the matter. The Publication Committee was ordered to look after the affair.

The Treasurer, in his report, showed the finances to be about the same as last year, at which time they were sound. The Finance Committee advised the regulation of expense in a suggestion that papers should not be printed until passed on. Their reports and suggestions were turned over to the Publication Committee, as was also the report of the Treasurer.

Secretary Kennedy stated that the names of 109 members would be dropped from the list unless their fees were paid by the time of the next publication of the Proceedings. Seventeen new members were added to the 214 previously reported, thus making 231 new members for the Denver meeting, and a total of 1,661. Mr. Kennedy recommended that the names of life and active members be published in separate lists in the Proceedings. The report was referred for publication. The Committee on President's Address moved its adoption, and referred it to the Publication Committee. The Nominating Committee reported the candidates for the respective offices during the ensuing year. The Permanent Secretary was requested to cast a ballot. The ballot was affirmative and the following candidates declared elected:

President, J. M. Good, St. Louis, Mo.; First Vice-President, C. E. Dohme, Baltimore, Md.; Second Vice-President, A. Brandenberger, Jefferson City, Mo.; Third Vice-President, Mrs. M. O. Miner, Hiawatha, Kan.; Treasurer, S. A. D. Sheppard, Boston, Mass.; Permanent Secretary, Chas. Caspari, Jr., Baltimore, Md.; Reporter on the Progress of Pharmacy, C. Lewis Diehl, Louisville, Ky.

The following were elected members of Council for three years:—G. L. Heckler, C. M. Ford and W. J. M. Gordon. J. Burgheim, of Texas, was elected to fill the unexpired term of C. Lewis Diehl, who was transferred to the reportership.

The Committee on General Prizes reported the awards as follows: First prize, to Henry Kraemer, for his microscopical and chemical examination of cloves; second prize, to A. R. L. Dohme, for his additional experiments with stramo-

nium, and his contribution on the relative alkaloidal value of two kinds of ipecac root; third prize, to L. F. Kebler, for his paper entitled "Analytical Alkaloidal Chemistry." The committee on the Ebert prize reported that none of the papers submitted had been found eligible. The reports of the Committees on Prizes were referred to the Publication Committee.

Chairman Eliel then reported for the Committee on the Revision of the United States Pharmacopœia, which endorsed the suggestion to introduce maximum-doses into the Pharmacopœia.

The sale of 13,944 copies of the Pharmacopœia, from its issue until the time the report was written, was reported. Deducting what has been sold abroad and to physicians, the sales would show that but about 25 per cent. of the pharmacists of this country have it in their possession. The committee recommended the introduction of popular and widely used preparations with working formulas, that the Pharmacopœia may be made more popular with all classes of pharmacists. Prof. Remington moved that the report be referred to the scientific section in order that its items might be given some discussion. The motion was carried.

Prof. Sayre moved that the thanks of the Association be voted Henry Kraemer for his efficient work as Reporter on Progress of Pharmacy. The motion was carried.

The committee on time and place of next meeting reported in favor of Montreal and fixed the date as August 12, 1896. J. E. Morrison, of Montreal, Canada, was chosen local secretary.

The committee on National Formulary presented their report through their chairman, Prof. Diehl, and advised a new edition, at the same time submitting the manuscript for the publication. The chairman stated that the calls which the committee had made upon some of the manufacturers for formulas were often replied to in vague terms, hence the inability of the committee to insert certain widely used preparations. The quantities which the formulas given in the Formulary were to make, had, in some cases, been lessened—experience indicating the uselessness of ordering large quantities. Acacia was recommended as the best emulsifier for prescription work, but for manufacturing purposes the other emulsifying agents given in the Formulary could be employed. A class of granular effervescent powders was proposed. The report was referred for publication. Prof. Whelpley moved that the revised edition of the National Formulary be published in the volume of the proceedings for 1895, and not separately. This was objected to by a number of those present, and after much discussion the whole matter was transferred to the Council with power to decide the manner of publication and distribution of the Formulary. It was thought that $1 should be the minimum retail price for a separately bound copy of the work. The Council was also granted the privilege of permitting the publication of smaller editions or of epitomes of the Formulary. This grant arose from an opinion held by many present that the work would be made better known among physicians if pharmacists would supply them with pocket editions. The following was presented:

Resolved, That the Committee on National Formulary be instructed to publish formulas of popular proprietary medicines, and provide names under which all pharmacists may manufacture and sell them.

Resolved, That the fanciful or trade names or synonyms be inserted as

proper names or synonyms in all cases where said preparations are not already provided with proper names by the manufacturer who introduces them.

Prof. Hallberg's report on the revision of the Constitution and By-Laws was, upon motion, referred to Council, to be taken up at a later session.

SECTION ON COMMERCIAL INTERESTS.

Chairman Seabury called the Section to order on Thursday, August 15th, at 3.30 P.M. He then read a letter from Mr. J. O. Burge, secretary of the Section, in which the latter gentleman expressed regrets for his absence. Clay W. Holmes was then asked to act as secretary *pro tempore*. The minutes of last year's session of the Section were read and approved. The chairman then delivered his address, which was entitled "*The Analysis of Our Past and Present Professional and Mercantile Complications.*" In this address the speaker favored the "Tripartite" plan when the relations of the manufacturer, jobber and retailer were under consideration. He recommended free alcohol for use in exported products, a factor which he said would put our industries on an equal footing with foreign competitors. The speaker called attention to the low wages usually paid drug clerks. The Universal Trade Association was given some not very favorable notice. The remedy for the present troubles, according to the chairman's idea, was to be had through the thorough organization of druggists into local, county, city, state and national associations. He recommended that a committee of nine active members be appointed to consider the present situation, the matter of sophistication, substitution and other pertinent subjects. Messrs. Hurty, Alexander, Patton, Holmes, Chalin, Quandt, Wooten, Heckler and Schuh were assigned to this special conference committee.

A national committee on trade interests and local organization was also suggested by the chairman. It was to be composed of three members of the American Pharmaceutical Association, these to be appointed by the President of the Association from among the members of the Commercial Section, and associated with these the chairman on Trade Interests of each State Association and the Associations of Canada. The Special Conference Committee, as also the National Committee, were recommended to report annually to the American Pharmaceutical Association through the Section on Commercial Interests.

The afternoon session of the Section on Commercial Interests having afforded insufficient time to complete the transaction of the business of the Section, a special session was held at 9 P.M., the Scientific Section, which was programmed to meet, granting the privilege of the evening. Chairman Seabury called the meeting to order, after which Secretary Holmes read the minutes of the afternoon session. The chairman's address was approved, and the resolutions connected with it were referred to the Executive Committee on Commercial Interests. In a paper entitled "*The Patent Medicine Evil,*" R. N. Girling discussed methods of regulating the sale of patent medicines, and the means of reducing the evil. In answer to a subject upon which the chairman of the Section ot Commercial Interests wanted information, F. E. Stewart and Joseph Helfman presented papers on "*Non-secret Medicines.*" Clay W. Holmes read a paper on "*A Final Remedy for the Patent Medicine Evil.*" On motion the meeting adjourned.

nium, and his contribution on the relative alkaloidal value of two kinds of ipecac root; third prize, to L. F. Kebler, for his paper entitled "Analytical Alkaloidal Chemistry." The committee on the Ebert prize reported that none of the papers submitted had been found eligible. The reports of the Committees on Prizes were referred to the Publication Committee.

Chairman Eliel then reported for the Committee on the Revision of the United States Pharmacopæia, which endorsed the suggestion to introduce maximum-doses into the Pharmacopœia.

The sale of 13,944 copies of the Pharmacopœia, from its issue until the time the report was written, was reported. Deducting what has been sold abroad and to physicians, the sales would show that but about 25 per cent. of the pharmacists of this country have it in their possession. The committee recommended the introduction of popular and widely used preparations with working formulas, that the Pharmacopœia may be made more popular with all classes of pharmacists. Prof. Remington moved that the report be referred to the scientific section in order that its items might be given some discussion. The motion was carried.

Prof. Sayre moved that the thanks of the Association be voted Henry Kraemer for his efficient work as Reporter on Progress of Pharmacy. The motion was carried.

The committee on time and place of next meeting reported in favor of Montreal and fixed the date as August 12, 1896. J. E. Morrison, of Montreal, Canada, was chosen local secretary.

The committee on National Formulary presented their report through their chairman, Prof. Diehl, and advised a new edition, at the same time submitting the manuscript for the publication. The chairman stated that the calls which the committee had made upon some of the manufacturers for formulas were often replied to in vague terms, hence the inability of the committee to insert certain widely used preparations. The quantities which the formulas given in the Formulary were to make, had, in some cases, been lessened—experience indicating the uselessness of ordering large quantities. Acacia was recommended as the best emulsifier for prescription work, but for manufacturing purposes the other emulsifying agents given in the Formulary could be employed. A class of granular effervescent powders was proposed. The report was referred for publication. Prof. Whelpley moved that the revised edition of the National Formulary be published in the volume of the proceedings for 1895, and not separately. This was objected to by a number of those present, and after much discussion the whole matter was transferred to the Council with power to decide the manner of publication and distribution of the Formulary. It was thought that $1 should be the minimum retail price for a separately bound copy of the work. The Council was also granted the privilege of permitting the publication of smaller editions or of epitomes of the Formulary. This grant arose from an opinion held by many present that the work would be made better known among physicians if pharmacists would supply them with pocket editions. The following was presented:

Resolved, That the Committee on National Formulary be instructed to publish formulas of popular proprietary medicines, and provide names under which all pharmacists may manufacture and sell them.

Resolved, That the fanciful or trade names or synonyms be inserted as

proper names or synonyms in all cases where said preparations are not already provided with proper names by the manufacturer who introduces them.

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On Friday, August 16th, at 8.30 A.M., three special trains left the Union Depot at Denver to take the members and friends of the Association on a trip up Clear Creek Cañon, over the famous Loop, to Silver Plume. Here the well-known Mendota Mine was visited, and the process of mining witnessed. The thoroughly delighted party then returned to Denver, arriving in that city about 7 P.M.

SECTION ON SCIENTIFIC INTERESTS.

The first session of this section was held on Saturday, August 17th, at 10 A.M. Prof. Remington presided in the place of President Simpson during the preliminary session of the Association proper, which is usually held as an introduction to the meeting of the section. At this meeting of the main body the minutes of the seventh session of the Council were read and approved. Chairman Dohme, of the section, then read his address, Prof. Good having been asked to occupy the chair during the reading. The speaker reviewed the history of chemistry from the latter part of the past century. He referred in particular to the progress that had been made in plant chemistry and the synthesis of organic compounds. Mention was also made of the discovery of argon and the terrestrial source of helium. The chairman expressed himself as pleased with the present outlook. He suggested that a committee of three, consisting of the Permanent Secretary, the chairman of the Section on Scientific Interests and the chairman of the Committee on Revision of the United States Pharmacopœia, be appointed to call upon members for research work; and that the expense of such work be paid out of the funds of the Association, the amount being subject to proper regulations. The address was referred to a committee of three for consideration of the suggestions. Chas. Caspari, Jr., of the Committee on the Use of Indicators Employed in the Titration of Alkaloids, which was outlined by Prof. Sayre at last year's meeting, reported the extensive work which the committee had performed. The committee had been assisted by Profs. Prescott and Lloyd. It suggested the use of hydrochloric acid as preferable to that of sulphuric for the titration of quinine, for the reason that the fluorescence was, to a large extent, circumvented. Hæmatoxylin was decided to be the best indicator for use in standardizing the acid and alkaline solutions, brazil-wood was recommended for use in the case of quinine, while for the titration of morphine, brazil-wood, cochineal and methyl-orange were all found to be serviceable. The opinion of the committee was to the effect that cochineal was the best general indicator for alkaloidal titrations. The report also gave certain instructions regarding the proper amount of indicator to be used, and in this connection mentioned the initial and final colors that should be obtained. The work is not yet done, but the tabulated results which accompanied the report indicated that the subject was being very thoroughly studied. The report was accepted with the thanks of the Association, and a motion carried to send a copy of it to the Revision Committee of the United States Pharmacopœia. Another motion to reimburse the members of the committee for the materials used in the work received the approval of the Association. Nominations for the officers for next year being in order, Messrs. Prescott, Dohme and Sadtler were named for chairman of the section. The first two gentlemen, however, withdrew their names, after which the nominations were closed until the afternoon session. Messrs. Alpers and Eliel were thereafter nominated for the secretaryship of the section, and nominations for this office were closed until the next session.

EXAMINATION OF ELM BARK, FLAXSEED AND MUSTARD FOR STARCH.

By J. U. Lloyd.

Prof. Lloyd next presented a paper which described work on elm bark, flaxseed and mustard with the aim of examining them for starch. This paper is printed in full on page 459 of this issue. Prof. Lloyd remarked on the decided power of the mucilage of elm bark to decolorize the iodine and starch compound. He had found that sulphuric acid would temporarily restore the color. He was not certain that this behavior was altogether due to the calcium compounds present; there seemed to him to be other things present in the bark which might partly account for the difficulty experienced in the detection of the starch whose presence he established in elm bark. Prof. Prescott spoke of the transient colors obtained by the action of iodine on the dextrins and similar compounds more closely related to starch. He thought the action of the sulphuric acid on the thick-walled granules of the starch-containing materials might affect these substances sufficiently to afford an evanescent color with iodine. Prof. Lloyd had, however, used the sulphuric acid only in quantities sufficient to prevent the production of an alkaline condition, therefore he believed that no such discrepancy as that mentioned by Prof. Prescott had been introduced. Mr. Ebert was of the opinion that traces of starch might be found in some powdered drugs, whereas it did not exist in the original state, from the fact that imperfect cleaning of mills might furnish enough starch to respond to the delicate iodine test. He thought a limit to such accidental contamination should be adjusted. Prof. C. S. N. Hallberg then read in abstract a paper on

THE EXAMINATION OF STARCH IN POWDERED ELM BARK.

By W. B. Day.

The author had employed a method somewhat similar to that used by Henry Kraemer in his examination of cloves, a paper presented at the Asheville meeting last year. He detected wheat starch, and from this adulteration inferred that it had been introduced in the form of flour. He found the granule of elm bark starch to be smaller than that of wheat starch. He computed the extent of the adulterant by assuming the amount of wheat starch present to represent 70 per cent. of the quantity of flour used in the admixture. In order to count the granules, the material under examination was suspended in syrup. Both papers were accepted and referred to the Publication Committee. Prof. Whelpley directed the attention of the section to the interest that was being displayed in the matter of detecting adulteration, while Prof. Sayre emphasized Mr. Ebert's suggestion to properly regulate the amount of accidental impurities which should be permitted to be present.

TARAXACUM ROOT AND TARAXACIN.

By L. E. Sayre.

It was intended to supplement some previous contributions on the same subjects, and is printed in full on page 465 of this number.

WHAT IS THE PURE ACONITINE OF COMMERCE?

By A. R. L. Dohme.

This investigator had examined all of the available makes of the American market. From his observations of color and consistency, experiments with

the melting points, titrations of the samples with decinormal sulphuric acid volumetric solution, and estimations of benzoic acid yielded upon saponification, the author concluded that none of the samples were pure, but were to a greater or less extent mixed with apo-aconitine and pseudo-aconitine. No two of the samples were found to be the same. He urged the necessity of having a definite product so that a physician could know what he was ordering and what effects to expect.

Professor Prescott thought that, in view of the unstable character of the alkaloids of aconite root, a concentrated preparation was probably the best form for use. He believed it would be difficult to keep the alkaloids in the free state, unless, perhaps, with the aid of a preservative. He was in favor of Squibb's method of assay by application to lips as the best known method.

The work of our foreign brethren, who have lately been investigating aconite alkaloids, came in for a share of attention in the discussion which followed the reading of the paper.

THE DIGESTIVE POWER OF PEPSIN.

By C. C. Sherrard.

The effect of the amounts of water and hydrochloric acid given in the official assay of pepsin was considered in detail. Chairman Dohme thought it would be well to have the attention of the Revision Committee of the U. S. Pharmacopœia called to the results of this investigation.

STRUCTURE OF OUR CHERRY BARKS.

By Edson S. Bastin.

An exhaustive study of the microscopical structure of our cherry barks was the subject of the next contribution. This paper is published in full on page 435 of this issue. Prof. Whelpley considered that the association owed Prof. Bastin many thanks for the means of so easily distinguishing the barks of the different species. The same speaker remarked that the Pharmacopœia directed only those barks known to be useful. He suggested that some one make determinations of the relative medicinal value of the barks of the unofficial species.

ASSAY OF WILD CHERRY BARK.

By A. B. Stevens and J. N. Judy.

In order to answer query number 1, "Is the thin, green wild cherry bark really more valuable therapeutically than the older and thicker bark?" the authors made comparative assays on carefully selected samples of each variety. The results furnished to the query a negative answer.

The method of estimation was based upon the conversion of the glucoside amygdalin into hydrocyanic acid and a volatile oil when the bark was macerated with water; second, upon the distillation of the hydrocyanic acid to separate it from the bark; and third, upon the estimation of the hydrocyanic acid, both volumetrically by titration with potassium hydrate solution and gravimetrically by conversion into the silver compound. The thick bark showed from ·32 per cent. to ·35 per cent., the thin bark from ·24 per cent. to ·27 per cent. of hydrocyanic acid. These amounts are much higher than have been reported. The authors established the fact that the methods of estimation formerly employed were very defective. Messrs. Stevens and Judy added water, and continued the distillation until no more hydrocyanic acid

could be obtained. A line of experiments which these gentlemen instituted showed that all but one per cent. of the whole amount of hydrocyanic acid present could be obtained by the method of estimation which they used. The glucoside existing in the barks was estimated by extracting the bark with absolute alcohol, evaporating the alcoholic extract to syrupy consistence, after which the glucoside was precipitated by the addition of ether. The impure glucoside obtained in this manner was freed from resin by dissolving it in water. The residue that was obtained when this water solution was evaporated to dryness was considered as glucoside. The yield of this substance from the thick bark equalled 4·12 per cent., and from the thin bark 3·16 per cent. Mr. Ebert mentioned that this paper was of practical value from the fact that the thin bark had always commanded a higher price than the thick, yet at the same time it was not near so good as the latter. The papers were referred to the Publication Committee. On motion, the section adjourned until 3.30 P.M. At this hour the second session convened.

After the reading of the minutes of the morning session, the Committee on Chairman's Address, consisting of Messrs. Sayre, Prescott and Diehl, reported favorably, and suggested that a sub-committee, to be known as a Special Research Committee, be appointed by the present incumbent of the chair. The committee was to consist of three members of the Association, and the Chairman of the Section on Scientific Interests and of the Committee on the Revision of the United States Pharmacopœia, *ex-officio*. They were to have charge of any special investigation which in their discretion was within the province of the section on scientific interests. It was recommended that this committee shall receive such encouragement, financially, as is necessary to advance its work. The suggestion was adopted, but made subject to the approval of the Council. Prof. Samuel P. Sadtler, of Philadelphia, was unanimously elected chairman of the section for next year. A ballot for secretary then took place. W. C. Alpers received a majority of votes. A committee, which had been appointed to revise the business of the section, proposed that in order to facilitate the procedure of business, a general rule be enacted which would limit the time allowed for the reading of a paper to fifteen minutes. Discussion was to be unlimited, provided it had bearing on the subject. The papers of authors who were present were to be given preference. These rules were to be subject to the vote of the section, by which means the time allowed for reading could be lengthened. In order to encourage discussion, it was ordered that the printed papers be distributed on the day of the first general session, and that a bulletin of them, stating the title and the time when they would likely be read, be posted in the proper places. The report of the Committee on the Revision of the United States Pharmacopœia was then read by Chairman Eliel, in order that there might be discussion regarding the suggestion which it contained. The committee recommended that granulated opium be used in the preparation of the tincture and the deodorized tincture, and that the use of precipitated calcium phosphate be omitted in their preparation. Professor Remington supported the use of the calcium compound, and referred to the difficulty of obtaining granulated opium as the objection to its use. Professor Hallberg was decidedly in favor of granulated opium and the dropping of the precipitated phosphate. Professor Caspari had obtained best results with No. 40 granulated opium, and had found the official method unsatisfactory.

Professor Sayre thought the presence of ammonium chloride or other salts in the precipitated calcium phosphate exercised an ill effect. The committee recommended that such of the aquæ medicatæ as are now directed to be made by trituration with precipitated calcium phosphate be made either by agitation of the oils with hot water and subsequent filtration, or by the use of a double filter, the inner one a size smaller than the outer and evenly saturated with the oil and the outer one wetted. Professor Hallberg objected to the use of precipitated calcium phosphate on account of the soluble salts which were likely to be present. He strongly recommended the hot water method, and was corroborated in his views by Mr. Alpers. The committee desired that experiments be made on the use of dextrin syrup or glucose in place of glycerin in the preparation of fluid extracts containing resinous matter. It was also recommended that experiments be made with acetic acid in the manufacture of these preparations and tinctures, to replace, in part, at least, the alcohol now directed. The chairman of the committee stated that numerous complaints had been made to the effect that soap liniment became solid at the ordinary temperature of the room. The committee suggested that this matter be investigated and assigned as the cause of the trouble either an impurity in the soap or that the Pharmacopœia had directed too large a quantity. Professor Hallberg stated that the presence of much stearate in the soap would tend toward such a condition. Professor Remington said that this trouble usually arose from inattention to the amount of moisture present in the soap, and recommended the use of the shavings that are obtained when the bars of soap are cut into cakes for sale. The committee thought the melting point should be stated for aloin, and that the solubility should be changed. They called attention to the incorrectness of the chemical formula, $K_6Fe(CN)_{12}$, for potassium ferricyanide, as stated on pages 477 and 520. On page 360, under sodium hypophosphite, in the second line of the second paragraph, mercuric chloride should be read instead of ammonium chloride.

The committee thought the term isonitril, which is used in describing the tests for acetanilid, should be superseded by the term phenilisocyanide, for the reason that the former term is meaningless. They desired to limit the use of the termination ol to phenols and alcohols, prohibiting its use as applied to aromatic hydrocarbons, which have a generally applied English name. To illustrate their suggestion, they stated that what is now called benzol and toluol should be known respectively only as benzene and toluene. They considered that the names hydrochlorate and hydrobromate, as applied to salts of hydrochloric and hydrobromic acids, are incorrect; that these should be changed to hydrochloride and hydrobromide. They thought that the name chloral as a heading for something that is not chloral, but chloral hydrate, is an error, and that the full name should be stated. The melting point of atropine should be 115° instead of 108° C. The committee thought a distinction should be made between Erythroxylon Bolivianum (Huanco leaves) and Erythroxylon Spruceanum (Truxillo leaves) as there is a microscopic difference in the leaves and a decided difference in the yield of alkaloid. The adoption of standards of strength and methods of assay were recommended for coca leaves, belladonna leaves and root, and henbane leaves. In the opinion of the committee, stramonium seed should be superseded by the leaves and stems for the following reasons, viz.: because the leaves and stems contain more alkaloid,

because the oil present in the seed renders the preparations of them immiscible with other preparations, and because the seed require a stronger alcolic menstrum than do the stems and leaves. It was advised that strophanthus and colchicum seed be deprived of oil before being used for the making of preparations. The definite chemical compound of gold and sodium chloride, $AuCl_3NaCl.2H_2O$, was offered to replace the mixture of the two chlorides which is now official. It was suggested to have the English name, of which tartar emetic is the synonym, read potassium and antimonyl tartrate instead of potassium and antimony tartrate. Attention was directed to the fact that the official carbonates of magnesium, lead and zinc are of basic character, and should be so qualified in name. Hydrastis should be required to contain a certain strength of white alkaloid. Hydrastine hydrochloride should be official. The committee offered the following additions to the directions for the assay of powdered opium: insert after the words "another portion of 10 c.c. of ether," the words "let the ether on the filter and crystals evaporate completely," and after the words "more than about 10 c.c. in all," insert the words "use a feather to remove the crystals that adhere to the flask." A distinction should be made between Pilocarpus pennatifolius and Pilocarpus microphyllus. A method of assay should be devised and a standard strength of pilocarpine fixed. The committee had found the official formula for the preparation of the solution of magnesium citrate unsatisfactory. They then submitted a formula which had been proposed by A. B. Stevens and W. Palmer at a meeting of the Michigan Pharmaceutical Association. It was as follows:

Magnesium carbonate	13·0	grammes.
Citric acid	26·5	"
Oil of lemon	0·128	"
Sugar	62·0	"
Potassium bicarbonate	2·0	"
Water, a sufficient quantity.		

Dissolve the citric acid in 250 c.c. of water, and add to this solution the magnesium carbonate which has been previously triturated with the oil. In the solution which results, dissolve the sugar. When this has dissolved, filter into an appropriate bottle having a capacity of 360 c.c. Then add enough water to nearly fill the bottle, drop in the potassium bicarbonate, immediately close the bottle with a cork, and secure the latter with twine. In connection with this subject, Professor Hallberg spoke of a formula which directed the sterilization by heat of the solution of the magnesium salt after it had been filtered into the bottles. After this treatment the bottles were stoppered and set aside until the finished article was called for, when the addition of potassium bicarbonate was made in the usual way. Professor Caspari mentioned the tendency of the solution of magnesium citrate to deposit the normal salt, and the necessity of employing sufficient citric acid to insure the formation of the more soluble acid citrate, or at least to prevent the separation of the normal citrate. Chairman Eliel, of the Reporting Committee, said that he was accustomed to rub a soluble essence of lemon, instead of the oil, with the magnesium carbonate. The report of the committee also contained the following formula for Sapo Mollis:

Olive oil	1,000 grammes.
Potassium hydrate	360 "
Water	3,000 cubic centimetres.

Dissolve 300 grammes of the potassium hydrate in 2,000 c.c. of water, and add 500 c.c. of this solution to the oil in a suitable vessel; place over a moderate fire, stirring until the mixture has thickened sufficiently. Gradually add the remaining solution, and continue the heat, stirring occasionally until the mixture assumes a transparent gelatinous form. Dissolve the remaining 60 grammes of potassium hydrate in 1,000 c.c. of water, add this to the mass, and evaporate to the proper consistency. Mr. Eliel had found this to afford a very good product, and desired that this formula replace the one now official, as the product of it is entirely unsatisfactory. He submitted a sample of his product. It was destitute of the objectionable odor usually noted in this preparation.

The report of the committee was accepted and a copy of it ordered to be sent to the Committee on Revision of the U. S. Pharmacopœia.

NOTES UPON SOME PHILIPPINE ISLAND DRUGS UNDER ANALYSIS FOR ALKALOIDS, ETC.

By A. B. Prescott.

The notes were taken from the laboratory work of Elgin Mallett and F. M. Marsh. All the articles have repute for medicinal virtue among the native people of the Philippine Islands. The drugs are designated by the English spelling of their native names; the botanical determination of the plants yielding them was not considered.

Dolulugai.—A seed of a light slate color and having a very hard testa. It is nearly spherical and about half an inch in diameter. The kernel is of a very solid texture, having a characteristic odor and a bitter taste. It is said that the natives dissolve the powdered dolulugai in vinegar and employ it as a specific for all pains of the stomach, also as a poultice in rheumatism. It was said to contain strychnine, but this is positively not so, since on analysis it gives entirely negative results. The principal constituents found on analysis were fixed and volatile oils.

Mountain Cinnamon.—A bark from one-fourth to one-half an inch thick, of a dark brown color and having an odor resembling a mixture of spices rather than the true cinnamon. It contains an aromatic volatile oil, tasteless resins, and a very large amount of coloring matter.

Manugal.—A very hard fibrous rhizome with rootlets, used by the natives as a stomachic, also as a purge by boiling thin shavings of it in cocoanut oil. It contains no alkaloids, but has a considerable portion of acid resins.

Vita.—A bark of a very thick, coarse texture, used as a remedy for fevers. Nothing was found to which its medicinal properties could be ascribed.

Macbujai.—From parts of drug in their possession the authors were unable to determine to what plant organ it belongs. It contains considerable resin, coloring matter and other plant constituents. The drug is excessively bitter, and is used in the form of a decoction as a remedy for fevers.

Tagalaoi.—Small branches or shoots having a bark about one sixteenth of an inch thick. The only important principle noted was a thick, balsam-like resin. It is used as an antiseptic. The usual mode of application is to boil the inner bark in cocoanut oil, and then use it in the treatment of wounds.

The work done on the above-mentioned drugs was, as far as the presence of alkaloids is concerned, of a decided negative character. None of the plants gave the slightest trace of their presence.

Arbutra.—The samples of this drug consist of billets, about 1½ inches in diameter and several feet in length, of a tough, fibrous wood, having a very characteristic cross-section not unlike pareira brava. The wood beneath the bark is of a uniform yellow color. Upon extracting with acidulated alcohol, and applying the general reagents, the solution gave heavy precipitates for alkaloids.

From the fact that it colored the chloroform yellow when shaken out from the water solution led to the belief that the alkaloid was berberine, and by carefully conducted tests this was verified. It responded to all tests for that alkaloid, and the authors were able to produce the hydrochloride under the microscope.

As to whether a white alkaloid is present, as in many other berberine-bearing plants, the authors were unable to say. The limited quantity of material and small percentage of alkaloid present was insufficient to attempt a separation. The amount of berberine, or total alkaloid, if another be present, was one-tenth of 1 per cent.

THE RELATION OF THE PHYSIOLOGICAL ACTION OF THE ELEMENTS TO THEIR POSITION IN THE PERIODIC SYSTEM.

By Prof. Beal.

WHAT PERCENTAGE OF THE UNITED STATES PHARMACOPŒIAL PEPSINS OF THE MARKET COME UP TO THE PHARMACOPŒIAL REQUIREMENTS?

By C. C. Sherrard and J. L. Tegarden.

Of the ten samples claiming to have a digestive power of 1 to 3,000, only two were found to substantiate this claim, and of these the authors found but one to meet their private ideas. Just what value this answer to the query possessed each member thought to decide for himself. The following papers were then read by title, and together with those previously presented, were referred to the Publication Committee.

CHINQUAPIN (*Castanea Pumila*, Mill.).

By Henry Kraemer.

(Printed in full on p. 453 of this issue).

THE COFFEE BEAN AND A PROXIMATE ANALYSIS OF THE PULP.

By Robert Combs.

ANALYSIS OF CUCURBITA FŒTIDISSIMA AND IPOMŒA LEPTOPHYLLA.

By W. H. Lang.

AN ESSAY ON THE SPLEEN AS A DIGESTIVE ORGAN.

By R. E Stuart.

The last three papers were presented by Prof. Sayre.

The section then adjourned until 7.30 P.M., at which hour Chairman Dohme called the third session to order.

The first paper presented at this session was one on

THE ASSAY OF ERGOT.

By A. R. L. Dohme.

Mr. Dohme submitted this in answer to query 17, "*Give the relative alkaloidal value, i. e., percentage of the cornutine of Keller, of Spanish, German*

and Russian ergot." He applied Keller's method of assay for this drug to samples obtained in New York. The results were as follows:

German ergot—(*a*) . . . 0·15 per cent. cornutine of Keller		
(*b*) . . . 0·14 " " " "	}	mean, 0·15 per cent.
(*c*) . . . 0·15 " " " "		
Spanish ergot—(*a*) . . . 0·29 " " "		
(*b*) . . . 0·28 " " " "	}	mean, 0·29 per cent.
(*c*) . . . 0·29 " " " "		
Russian ergot—(*a*) . . . 0·18 " " "		
(*b*) . . . 0·19 " " " "	}	mean, 0·18 per cent.
(*c*) . . . 0·17 " " " "		

The author thought that until we know more of this cornutine of Keller, the best we can say is that Spanish ergot is more valuable than Russian ergot and this more valuable than German ergot.

QUERY 15.—IS THE DECIDEDLY DIFFERENT YIELD OF PILOCARPINE DUE TO TWO SPECIES OF PILOCARPUS? IF SO, WHAT ARE THE SPECIES AND WHAT IS THEIR RELATIVE CONTENT OF ALKALOIDS? IF NOT, WHY HAS PILOCARPINE BEEN SO SCARCE?

Mr. Dohme also presented a paper to deal with this question. He said that the appearance in the market of the small jaborandi leaves, called Pilocarpus microphyllus, was well known, and that in order to decide the query he had assayed several samples of this variety, as also of the variety pennatifolius, by Keller's method, which involves the titration of the alkaloids with decinormal acid solution.

The following results were obtained:

Philocarpus pennatifolius		I.	purchased in	1893—0·33	per cent.	total	alkaloids.
"	"	II.	"	" 1894—0·18	"	"	"
"	"	III.	"	" 1895—0·19	"	"	"
"	microphyllus	I.	"	" 1894—0·16	"	"	"
"	"	II.	"	" 1895—0·19	"	"	"

From these results it would appear that Pilocarpus pennatifolius, formerly obtained, contained more alkaloid than the leaves recently obtained in this market. P. microphyllus, which has only made its appearance in this market during the last few years, contains as much alkaloid as the P. pennatifolius now in the market, and both contain less than the jaborandi leaves formerly obtained. The answer to the query, then, would be that the cause of the scarcity of pilocarpine is not the preponderance or substitution of any new variety of jaborandi leaves, but the deterioration of the drug in general, the yield having decreased during the past few years. Poehl[1] some time since obtained as much as 1·97 per cent. of alkaloids from jaborandi leaves, which he claimed were hairy and not smooth, while Budee and Miller[2] obtained from the ordinary smooth, large leaves, such as we usually meet with in this country, only as much as 0·19 per cent. alkaloids. Whether the hairy leaves, which yield the large percentage of alkaloids, are or are not any longer raised, the fact remains that the leaves which are now, and have been for some time, brought to this market, and apparently to Europe also, are of the smooth variety, and contain very much less alkaloid. It is hence probable that, until

[1] Poehl—Untersuchung der Blätter von Pilocarpus officinalis, St. Petersburg, 1879.

[2] Budee and Miller—Archiv für Pharmacie, 216, p. 25, 1880.

we again manage to import the hairy jaborandi leaves, the chances for the price of pilocarpine declining are not very favorable.

Prof. Ryan stated that the price of pilocarpine had advanced considerably, on account of the great demand at present existing for it. He also stated that the supply was not equal to the demand. Prof. Remington spoke of the great value of pilocarpine medicinally, and said that the source of such a remedy should be carefully watched, lest it be completely exhausted.

A COMPARISON OF THE BEST KNOWN METHODS FOR THE ASSAY OF COCA LEAVES.

By A. R. L. Dohme.

The experiments were all made on the same specimen of Erythroxylon Bolivianum in No. 60 powder. The results were:

Keller's method	(*a*) . 0·78 per cent. total alkaloids	} mean, 0·79 per cent. total alk'ds.	
	(*b*) . 0·80 " "		
Beckurts' method	(*a*) . 0·26 " "	} mean, 0·265 " "	
	(*b*) . 0·27 " "		
Schweissinger's method	(*a*) . 0·52 " "	} mean, 0·505 " "	
	(*b*) . 0·49 " "		
Thompson's method	(*a*) . 0·26 " "	} mean, 0·27 " "	
	(*b*) . 0·28 " "		
Lyon's method	(*a*) . 0·17 " "	} mean, 0·165 " "	
	(*b*) . 0·16 " "		
Lyon's method modified[1]	(*a*) . 0·32 " "	} mean, 0·31 " "	
	(*b*) . 0·30 " "		

This shows how very much the different methods vary as to the amount of alkaloid they extract from the drug, and how important it is to use the best one if a correct assay of the drug is to be made. Keller's method so far exceeds all other methods in extracting the most alkaloid from coca leaves that comparisons are entirely out of place, Schweissinger's method, the nearest to it, being as much as 40 per cent. out of the way practically.

In the case of Beckurts' method, it was necessary to separate the chlorophyll from the alkaloid by dissolving the latter in weak acid, making this solution alkaline and shaking out with chloroform.

The formation of emulsions is very general in the case of this drug when shaken in alkaline solution with chloroform or ether, and was encountered in every assay, making the operations more tedious, as time was most frequently resorted to in order to bring about a separation of the liquids.

THE ALKALOIDAL VALUE OF IPECAC STEMS.

By A. R. L. Dohme.

In previous experiments the author has shown that the cork cells and those of the cortical parenchyma adjacent to them are the seat of the alkaloids of ipecac root. Furthermore, he showed that the thinner root contains more alkaloid than the thicker or fancy root.

Since then it has been observed by the writer that what he termed "wiry" root is made up of two parts of the plant, viz.: the stem proper and the part of the plant that merges the root into the stem. While the stems are usually quite

[1] The modification consisted in using, instead of petroleum ether, a mixture of 70 parts of of petroleum ether and 25 parts of official ether.

straight with a smooth surface, the part that merges it into the root is almost invariably twisted and slightly annulated. This then divided the ipecac root of commerce into three parts, *root*, *merging portion* and *stems* which shall here be designated respectively as fancy root, wiry root and stems.

Two lots, "A" and "B," of commercial ipecac root, were spread out separately, and each divided up into the three portions. All six portions were assayed by Keller's method, using titration with volumetric acid solution, and with the following results:

	Sample "A."	*Sample "B."*
Fancy root . .	2·00 per cent. alkaloids.	2·33 per cent. alkaloids.
Wiry root . . .	2·13 " "	2·43 " "
Stems	1·77 " "	2·15 " "

From these results but one conclusion can be drawn, and that is that the wiry root, as was shown last year, is richer in alkaloid than the fancy root, and that the stems contain less alkaloid than either the fancy or wiry root, but still contain considerable alkaloid.

THE NEED OF AUTHORITATIVE STANDARDS FOR ANTISEPTIC SURGICAL DRESSINGS.

By Seward W. Williams.

This paper also embodied the views of recognized surgical and pharmaceutical authorities as to the proper basis on which such standards should be established. The prime object of the paper was to obtain a decision as to what the label of antiseptic surgical dressings should bear. It was decided, after some discussion, that the label should state what percentage of the weight of the finished product was made up of medicament, and also how many grains per square yard or grammes per square meter this percentage represented. It was also thought well to state what strength of antiseptic solution would be obtained in case it was necessary to wet the dressing with water sufficient to saturate it. The author in his paper asked that a standard weight and count of threads in woven fabrics be established. No action was taken on this point by the section, but the consideration of the whole subject of the paper, which certainly needs attention, was referred to the Committee on National Formulary.

A REPORT OF THE ANALYSIS OF 27,000 PRESCRIPTIONS.

By Prof. Patch

The object of this work was to ascertain the variety of medicines used and the extent of their use. The prescriptions were from all sections of the United States. Prof. Patch had expected to have reported on 50,000, and had mentioned this number in the name of his paper, but he was not successful in having that number sent to him. The report was accompanied by an extensive table which he had employed as a record in his work. He reported a large use of proprietary articles. Philadelphia led in the use of official preparations. Of the classes of preparations fluid extracts supplied eight per cent. of the calls and pills six per cent. Other classes of preparations fell below these figures. In the discussion that followed the paper, Prof. Hallberg moved that the term prescription statistics be substituted for prescription analysis, or analysis of prescriptions, in order to prevent a misunderstanding of the work. This motion was carried, as was also another, to invite State associations to

publish such statistics of this nature as they might have along with this list in the Proceedings of the American Pharmaceutical Association.

EXTRACTS OF COD LIVER OIL.

By F. E. Stewart.

COD LIVER OILS.

By C. C. Sherrard.

He stated that he knew of no reason why the fish of this country could not be used for the production of as good an oil as is produced in Europe. The secretary then read by title a paper on the

ANALYSIS OF KOLA.

By J. W. Knox and J. O. Schlotterbeck.

and another entitled

LABORATORY NOTES ON PEPSIN, COCA LEAVES AND IPECAC ROOT.

By L. F. Kebler.

All of the papers of the session were referred to the Publication Committee.

The next business of the section was the installation of officers for the ensuing year. These were Prof. S. P. Sadtler, chairman; W. C. Alpers, secretary. The section then adjourned.

SECTION ON COMMERCIAL INTERESTS.

The section on commercial interests held a session at 9 A.M., on Monday, August 19th, in order to complete the business left over from the other two sessions. A paper was presented on

AMERICAN CHEMICAL INDUSTRIES.

By N. A. Kuhn.

The author thought the progress that has been made in chemical industries in Germany should be an impetus to American chemists. Mr. Hayes, of the Universal Trade Association, had been notified that the privileges of the floor would be extended to him at this particular session; but in spite of this fact he was not present. The plan of the organization just referred to, was discussed by several of the members, but in view of the fact that some of the largest patent medicine manufacturing companies had refused to adopt the plan, the case seemed hopeless to those present. The section decided to await developments. Leo Eliel outlined a policy which he thought would provide something that would be practically valuable; this, like the plan proposed by Clay W. Holmes, had as its foundation the thorough organization of the pharmacists. The report of the Committee on Tax-free Alcohol showed that the committee had carried out the instructions of the Association as given at Asheville, and had called upon the Secretary of the Treasury to do the Association's bidding. The results of this visit have already been made public. The report was accepted and adopted. Prof. Fennel moved that the section reaffirm the action taken last year by the Association on the subject of tax-free alcohol. This motion was opposed by Mr. Heckler and Mr. Snow. Mr. Ebert urged the adoption of the motion, stating that he believed tax-free alcohol, under the existing circumstances of to-day, would be the death knell of pharmacy in the United States. He argued that it would be impossible for any one to make any preparations, and that pharmacy would be reduced to merchandising.

The question was referred to a committee composed of Messrs. Heckler, Fennel and Cook, and these afterward suggested that the position taken in the matter last year be maintained.

A CURE FOR THE CUT-RATE PROBLEM.

By C. S. Klein.

Chairman Seabury was re-elected for the coming year. Clay W. Holmes was elected secretary of the section, and Messrs. Scholtz, Sempill and McDonald selected as the other members of the committee. The officers of the past year were given a vote of thanks in recognition of their services.

SECTION ON PHARMACEUTICAL EDUCATION AND LEGISLATION.

The first session of this section convened at 10 o'clock in the morning of Monday, August 19th. President Simpson called the meeting to order, after which Secretary Kennedy read the minutes of council's meeting. The Publication Committee had decided to publish the revision of the National Formulary, and to bind it with the Proceedings. They also decided to have some copies bound separately, and fixed the price for such copies at fifty cents. The minutes were approved. Secretary Kennedy reported the applications of four persons for membership. The applicants were invited to complete their membership. The Association then adjourned. Chairman Good, of the Section on Pharmaceutical Education and Legislation, asked Professor Beal to occupy the chair while he delivered his address. The speaker mentioned the difficulties of getting pharmacy laws enacted, but he was not of the opinion that legislation alone would remedy all evils. Education and a proper appreciation of the responsibilities of pharmacy he believed to be potent factors towards the betterment of things. In speaking of degrees, he favored the title, Graduate in Pharmacy, and recommended experience before entrance at college. He thought those taking the degrees of Pharmaceutical Chemist and Doctor of Pharmacy should be required to attend college for a longer term than those receiving the degree of Graduate in Pharmacy. He suggested that the committee of the section be increased to five members. He thought the existence of several boards of pharmacy in one State, as, for instance, in the State of New York, was unnecessary. He recommended the passage by Congress of a law, making, after a short term of years, the metric system of weights and measures the only legal one, and suggested that a committee consisting of one delegate from each State association, be appointed to take charge of the matter. Professor Sayre moved that the recommendations be approved. W. C. Alpers moved that the address be referred to a committee of three for consideration, and that this committee report at a subsequent session of the section. The chair appointed as the committee: Messrs. Sheppard and McGill and Mrs. M. O. Miner. Chairman Good called for the reports of committees. Professor Hallberg reported on a sheet which had been sent out with the Proceedings for 1894. This sheet was issued by the section, and was intended to serve as a means of obtaining information that would be of value to the section. The sheet was divided under the four headings of poison legislation, registration statistics, college attendance and registration requirements. Copies of the sheet had been mailed to the boards of pharmacy of the different States, and their aid solicited, but for reasons unknown to the secretary of the section, some of the boards had not replied. Chairman Good asked that the committee

be given further time, as they had not been enabled to complete their labors, because of the difficulty of obtaining information. He also asked that the special committee on an outlined course of study for students of pharmacy be granted more time, stating, in connection with his request, that the colleges, when consulted on the subject, had, in most cases, replied simply by sending the announcements of their courses. Secretary Hallberg then reported what information he had been able to get on the several inquiries given on the sheet under the division of poison legislation. Massachusetts, Michigan and Wisconsin had sent in complete State reports of the deaths that occurred from poisoning during 1894. Louis Emanuel, of Pittsburg, Pa., had furnished the secretary with the report for that city. The whole number of reports that had been received covered about one-sixth of the country's population, and showed a total number of 900 deaths from poisoning during 1894. Morphine, carbolic acid, opium, arsenic, rough on rats, Paris green, strychnine, laudanum and chloroform were the poisonous substances most frequently employed. The report included all cases, whether accidental, suicidal or homicidal. It was received and referred for publication. Prof. Prescott inquired as to the completeness of the United States Census Report in the matter of poisoning. Prof. Hallberg did not think the report of sufficiently recent date to afford the information desired. He stated, however, that the report showed suicides by poisoning to be the greatest in numbers. He also stated that Mississippi and Minnesota, and some other States, had followed Georgia in the matter of requiring morphine to be wrapped in red paper and to be labelled with white letters. Some of the States require that arsenic be colored with charcoal or indigo, in order that its presence may be indicated. Secretary Hallberg then read a list of the States which require the registration of poisons. Prof. Prescott spoke of the importance of this matter, and advised the Association to give it proper attention. He mentioned the fact that indifference or carelessness in the sale and registering of poisons was often a source of disgrace to pharmacists, by virtue of the use of the substance for suicidal or homicidal purposes. It was moved and carried that a committee be appointed to draft suitable resolutions regarding the registration of poisons, and that a copy of the draft be sent to each Board of Pharmacy in the United States. The chair appointed Messrs. Prescott, Remington and Alexander to serve on this committee. C. S. N. Hallberg and J. H. Beal were nominated for chairman for the coming year. Dr. Bartley was nominated for secretary, and the nominations closed until the next session. A paper was then read on

REQUIREMENTS FOR GRADUATION.

By S. A. D. Sheppard.

He favored three years' experience exclusive of time spent at college. He believed store experience to be absolutely necessary in the training for pharmacy. He thought the college has a better chance to determine the value of store experience than has the State Board; that the examination which the trustees usually give should be very stringent, more so than the examination of the State Board. He advocated leaving the degree of Graduate in Pharmacy untouched as an indication of college training and store experience. He thought other degrees should require proportionately more work, probably special work, but not necessarily store experience. Prof. Oldberg then read a paper on

BETTER EDUCATION IN PHARMACY.

By J. B. NAGELVOORT.

The latter gentleman advocated a high standard for the persons engaged in the responsible positions of the business. Both papers were received and referred to the Publication Committee. Considerable discussion followed. All agreed that store experience was necessary for success in business. Prof. Prescott discussed the advantages and disadvantages of obtaining the store experience before and after college training. He believed it would be best for the student to pass from the High School into the College of Pharmacy without interrupting his habits of study, and stated that the graduates of the University of Michigan School of Pharmacy thought experience in the store after graduation produced better results than experience gained before attending college. Mrs. Miner thought college work and store experience should be alternated, the apprentice serving at least a year before attending college instruction. Prof. Caspari thought the practical experience a student would get in the laboratory of a college preferable to that which he would acquire in a store. Prof. Oldberg held the same opinion, and thought a student could readily obtain store experience after graduation. Messrs. Mayo, Hurty, Whelpley, Hallberg and McGill also participated in the discussion, which served to bring out the complexity of opinion on the subject of applying pharmaceutical education.

Adjournment was moved and carried.

The second session of the Section on Pharmaceutical Education and Legislation met at 3.30 P.M.

The reading of the minutes of the first session was dispensed with.

Nominations for officers during the ensuing year being again open, and no one else having been nominated, Prof. Beal withdrew his name for chairman, in order that Prof. Hallberg might be unanimously elected. Prof. Beal was then nominated for secretary, and Dr. Bartley, who had been nominated at the previous session, withdrew in order that Prof. Beal's election might also be unanimous.

Prof. Hallberg read a report on the registration statistics of the United States, which showed that fifty per cent. of the applicants for registered pharmacist's license in 1894 had successfully passed the examinations; that sixty-six per cent. of those taking the assistant's examination had been granted certificates; and that the whole number of pharmacists registered during 1894 was 3,500. The matter of regulating graduation requirements, which the Association had undertaken last year at Asheville, and which they sought to facilitate by sending out a sheet asking the opinion of colleges, was laid on the table by a vote of the session. Some of the members present expressed their hopes that the Association would, in the future, leave such matters alone. Mr. Sheppard recommended some requirements which would guarantee to State Boards that applicants for licenses had been afforded some actual practice. The recommendations were amended somewhat by Prof. McGill. They were then to the effect that an applicant far a pharmacist's license must have an academic education equal to that required for entrance to a high school, must have attended for six months a college of pharmacy, receiving during that time both didactic and laboratory instruction, and must show evidence of having had thirty-six months of practical experience exclusive of the time spent at college.

Mr. Ebert moved that the recommendations be referred to the state associations, and it was so ordered.

Prof. Hallberg, as secretary of the section, read a report on legislations that had dealt with pharmacy during the last two years. Its chief matter of interest was the changes that have taken place in the selection of the members of pharmacy boards and the organization of boards in States heretofore having no such body.

A NATIONAL PHARMACY, FOOD AND DRUG LAW NOT POSSIBLE UNDER THE PRESENT UNITED STATES CONSTITUTION.

By Prof. Beal.

The author claimed that the Federal Government can deal only with Inter-State commerce, and that the states must regulate their own internal affairs as the constitution now stands.

Adjournment until 10 A.M. on the following day was ordered. At this hour, Tuesday, August 20th, the third session of the section was held after President Simpson had called to order a general session of the Association, in order that the minutes of Council might be read and disposed of. The members of the Committee on Transportation for next year were appointed. Sundry amendments to by-laws were recommended. The report of the Committee on Transportation was read. It recommended the passage of a special vote of thanks to the Sub-committee on Transportation, which consisted of Messrs. George R. Leis, R. J. Brown and C. E. Corcoran. The report was accepted and the vote of thanks passed. The general session then adjourned and the section began its final meeting. The reading of the minutes was dispensed with, and the order of business upon motion was reversed. Mrs. Miner read the favorable report of the Committee on Chairman's Address. The report was received and adopted. The Committee appointed to consider the President's Address made last year and regarding the curriculum of colleges, reported that a few of the colleges had responded to their call for information. The committee recommended that the courses outlined by Dr. Dohme and the University of Michigan be referred to the Committee on Publication. This recommendation was approved by the section. The first paper present at this session was

ON PROPOSED CURRICULUM, FOR CANDIDATES BEFORE BOARDS OF PHARMACY.

By W. C. Alpers.

The object sought by the author was the establishment of a standard curriculum for the United States, in order that pharmacy might have a national character and meaning. Mr. Ebert moved that the section send copies of the paper to the secretaries of the Boards of Pharmacy with the request that they consider the suggestions contained therein. The motion was carried, and Mr. Alpers was voted the thanks of the Association.

THE PRACTICAL SIDE OF TRAINING IN OUR COLLEGES OF PHARMACY.

By Joseph Jacobs.

He thought the student should be instructed in things of such importance in pharmacy as the manufacture of perfumery and photographic materials, the adjustment of trusses, the decoration of windows and the art of advertising. He suggested that this class of instruction be added to the present curriculum, no part of which he wished to have annulled. A paper was then read on

SCHOLARSHIPS.

By L. E. Sayre.

He favored the establishment of the foreign scholarship proposed last year by Professor Patch. He believed it would be a good way to import new ideas. The paper was accepted and referred to a committee of Messrs. Sayre, Oldberg and Ebert. They were to consider the feasibility of carrying out the plan and were to report at the next annual meeting.

COLLEGE ATTENDANCE AND REGISTRATION REQUIREMENTS.

By Prof. Beal.

These subjects were two of the headings of the sheet sent out by the section. Secretary Hallberg then read the following papers by title:

"Pharmaceutical Degrees—What Should They Mean," by Dr. Bartley; "Laws for the Prevention of the Adulteration of Drugs," by Professor Fennel; "The Position of the American Pharmaceutical Association Towards Pharmaceutical Education," by Professor Kremers; "Registration Requirements of American Pharmacy Laws," by Professor Beal; and "The Metric System—Its History and Introduction," by R. A. Sauerhering.

The papers were all accepted and referred to the Publication Committee. Prof. Hallberg was installed as the chairman of the section for the ensuing year, and Prof. Beal as the secretary. W. R. Ogier was selected by them as one of their associates; the other two are yet to be chosen. Prof. Oldberg moved that the section tender the officers of the past year a vote of thanks for their efficient services. It was so ordered. The section also voted its thanks to Mr. John Koehan as a recognition of his herbarium of Colorado plants, which he displayed in the meeting room. The section then adjourned.

FINAL GENERAL SESSION.

The final general session, which had been advertised on the programme to meet at 10 A.M., on Wednesday, August 21st, convened on Tuesday evening, at 8.30. President Simpson called the meeting to order and directed that the minutes of the last session of council be read. At this session Mr. Alpers had moved that any member buying five copies or more of the separately bound National Formulary be allowed the dealer's discount of one-third. Mr. Sheppard moved that the price of the volumes of Proceedings prior to 1890 be reduced to one-half of the price now asked. Both motions prevailed. The minutes of the council were approved. It was moved and carried that the title *Permanent Secretary* be changed to *General Secretary*. Prof. Hallberg read his revision of the by-laws, the greater part of which was adopted. It was agreed to make the chairmen of the sections and of the committee on the revision of the U. S. Pharmacopœia members of council, thus increasing the membership of that body from seventeen to twenty-one. It was moved and carried that the local secretary be made a member of the transportation committee and its chairman. After paying yearly dues for forty years it was agreed that an active member should be entitled to life membership. To necessitate an extension of the life of railroad tickets to the places of future meetings, a motion prevailed to add sufficient social features to accomplish this.

The permanent secretary said he had received the report of the reporter on progress of pharmacy, and that the reporter for the past year, Henry Kraemer,

was in Europe. The report of the Auditing Committee certified to the correctness of the accounts. The report of the Committee on the Status of Pharmacists in the Army and Navy of the United States, which had been referred to this session, was submitted. The committee had done a great deal of good work. The report was accepted and the committee continued. Mr. R. A. Sauerhering, a member of the association and a Member of Congress from Wisconsin, presented a bill which he proposed to present in Congress making the metric system of weights and measures the only legal system on and after July 1, 1900. The communication was referred to the committee having this matter, in hand, and later they reported their approval of it. The committee on the president's address heartily approved of his ideas to elevate the educational standard of apprentices. A vote of thanks was given to the President.

The finance committee was instructed to appropriate a sum not to exceed $200, for the use of the section on commercial interests in organizing the pharmacists of the country, with a view of remedying the present evils. The same committee was ordered to appropriate $20 to defray the expenses of materials incurred by the committee on indicators. Dr. F. E. Stewart proposed that the chair appoint three members to act as a National Legislation Committee by regulating laws inimical to pharmaceutical interests. This proposition met with the approval of the Association. A tax-free alcohol motion was tabled. The chairman of the section on scientific interests reported regarding the observation sheet which he had sent to all members. The number of replies which he had received was small in proportion to the membership. Mr. Sheppard moved that the local secretary be made the chairman of the committee on arrangements. The association agreed. The committee on National Formulary and the special committee on membership were instructed to continue their work. Messrs. Wooten, Dimmitt and Eliel were appointed a committe on trade interests. The Librarians' Association, which was holding its annual meeting in Denver, and the American Pharmaceutical Association exchanged fraternal greetings. Mr. Seabury moved that a delegation of five be appointed by the chair to represent the American Pharmaceutical Association at the meetings of the National Wholesale Druggists' Association and Proprietors' Association. Messrs. Ford, Gordon, Ward, Thompson and Scholtz were assigned to this duty. The newly-elected President and third Vice-president were formally installed after being conducted to the chair by Prof. Remington and Mr. Ebert. The retiring officers were given a rising vote of thanks.

President Good then appointed the following committees: General Prizes, Messrs. Patch, Rice and Kaufmann; Revision of the United States Pharmacopœia, Messrs. Eliel, Stevens, Bartley, Klie and A. R. L. Dohme; on National Formulary, Messrs. Diehl, Hallberg, Klie, Fennel and Conrath. He reappointed the delegates to the section on materia medica and pharmacy of the American Medical Association. The members then attempted to express their gratitude for the kind treatment and thoughtful attention they had received from every one in Denver, and decided that the chair should appoint three members to draft suitable resolutions on the subject and to publish the same in the papers of the city. President Good appointed Messrs. Thompson, Dohme and Barnum to attend to this matter, and the Association decided that the local secretary, local committees, ladies' reception committee, local press, Chamber

of Commerce, druggists of Denver, hotel-keepers, citizens of Denver, Governor of the State and Mayor of the city, should all be mentioned therein. The Association adjourned at midnight to meet in Montreal, on August 12, 1896.

On Monday evening, August 19th, the Association attended a grand organ recital at Trinity Methodist Church, under the direction of Dr. Gower. On the afternoon of Tuesday, August 20th, an electric car ride was given the members by the Denver Chamber of Commerce. The route was through the streets of Denver to suburban resorts, and started from the Brown Palace Hotel. On Wednesday morning the members of the Association left Denver. Those who did not immediately return home either went on the excursion around the "Circle," which had been advertised, or a lately organized excursion to Salt Lake City.

NOTES AND NEWS.

The *Chemist and Druggist*, of London, issued a monster midsummer number on July 27th. It is weighty evidence of what can be done in London in the advertising line. Except in "mere bigness" the reading matter was as meritorious in its line as the advertisements were in theirs.

The *Archiv der Pharmacie* devotes its whole issue of July 31, nearly seventy pages, to a biographical sketch of the late Professor Flückiger, by Professor E. Schär. Additional value is given to this paper by the very complete chronological list of Flückiger's contributions to science, beginning with the first one in 1852, and continuing to within a very short time of his death, the last having been written in Brooklyn and published in the *Pharmaceutische Rundschau*, of New York. Flückiger's papers, books and reviews number considerably over 400.

The *Pennsylvania Board of Pharmacy* held an examination at Williamsport, the latter part of July. Ninety applicants for registration appeared for examination. Sixty-one applied for registered pharmacist certificates, and twenty-nine for qualified assistants certificates. Thirty-six of the former and twenty of the last named passed the examination successfully. The next meeting of the board will be held in Philadelphia and Pittsburg in the month of October. Persons desiring to be examined at that time should write to the secretary, Charles T. George, Harrisburg, Pa., on or before the 1st of October, for application blanks and full information as to the exact time and place of meeting. The following persons were successful at the Williamsport examination: Charles Kleinfelter, George G. Strott, B. F Cain, Wm. W. Long, C. W. Lindig, Samuel S. Wendle, W. S. Klonski, Stanley Szarzynski, DeForrest Hart, Paul Herbert Gross, Harry Lewis Horst, D. F. Everett, Frank Howard Snyder, J. R. Smythe, F. A. Bunting, J. W. Starr, L. A. Kessler, S. A. Geakle, Edythe Weston, Philip L. Barbment, J. A. Faessel, E. O. Franke, H. A. Spilker, J. D. Lehman, O. C. Bresser, Charles Poomsky, B. Perlman, C. L. Freeman, W. R. Lauterbacher, C. F. Schminkle, O. G. Fegley, A. C. Aichner, L. G. Nail, R. A. Simpson, W. M. Porter, C. B. Long, P. W. H. Schearer, Nicholas F. Weissner, M. D. Lingle, E. Q. Anewalt, George F. Hileman, William S. Warfel, H. A. S. Shuler, J. Willis Hall, Theodore E. Meyers, Thomas C. Waters, A. J. Civins, Chas. W. Harter, Louis Frank, Wm. B. Goff, Arthur C. Ried, Thos. E. Fording, Marcus C. Williams, R. B. Seybert, Harry G. Hollar.